

NESMEYER

GLOSSARY OF ORDNANCE TERMS

Preliminary Edition

June 1959

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ORDNANCE ENGINEERING HANDBOOK OFFICE
DUKE UNIVERSITY
DURHAM, NORTH CAROLINA

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OF
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Walker W. Holler, *Editor*

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Preface

This preliminary edition of the GLOSSARY OF ORDNANCE TERMS consists of a single alphabetical listing of approximately 9,000 entries, including roughly 7,500 defined terms, 1,000 entries for cross reference only, and 500 commonly used abbreviations. It is published as a *preliminary edition*, **Preliminary edition**, without waiting for more complete coverage or for **9,000 entries** completely acceptable definitions for all the terms included, with the hope that its users will be generous in sending in suggestions for corrections, additions, and general improvements, thus making more useful the forthcoming *official edition*.

The Glossary is intended to become a part of the Ordnance Engineering Design Handbook series. It was natural, therefore, that initial emphasis was **Part of Ordnance Engineering Design Handbook series** on securing entries of interest to those engineers, both Government and contractor employed, engaged in the areas of Ordnance design. Recent emphasis has been on broadening this coverage to include other Ordnance areas.

The immediate purpose of the Glossary is to serve as a ready reference for ascertaining the meanings of terms frequently encountered in connection with Ordnance activities, particularly those terms which are outside the user's immediate area of familiarity and are not adequately defined in standard dictionaries and other readily available references. A long range **Purpose** purpose is that of promoting uniformity in the use and understanding of Ordnance terminology. In these days of rapidly advancing technology, adequate guidance in this direction becomes of great importance to avoid formation of many insulated compartments of specialized terminology.

A fundamental publication aimed at establishing uniform names for end items is *Cataloging Handbook H6-1*, also designated as Department of the Army Supply Bulletin 708-301, prepared and published periodically by the **Relation to DOD Cataloging Handbook** Cataloging Division in the Office of the Assistant Secretary of Defense for Supply and Logistics. That publication lists Federal names for many items and, in numerous cases, includes definitions. Item names of particular Ordnance interest, together with definitions where included, have been taken from that publication and included herein.

As in *Cataloging Handbook H6-1*, item names taken therefrom are **Manner of entry of terms** printed herein in *all capital letters* to signify the Federal item name in each instance. Item names and similar entries are generally listed in catalog form, that is, in inverted order with the principal noun first. (Examples: **ROCKET, TRAINING** and **GUN, SELF-PROPELLED, FULL TRACKED**.) Other terms are generally listed in the more normal order. (Examples: **underwater ordnance** and **initial velocity**.)

Important abbreviations are included in this Glossary as regular entries. They are also given in parentheses following term entries where appropriate. Additional information concerning this subject will be found under the entry **Abbreviations**, "abbreviation." An asterisk (*) is used to indicate that the definition to the Point of such symbol was taken from *Cataloging symbols, cross references Handbook H6-1*. Cross references have been liberally included to assist in locating defined terms or additional information. Standard dictionary practice has been followed in this respect, including use of the abbreviation "Cf" for "compare."

The Glossary was prepared by the Ordnance Engineering Handbook Office of Duke University, under Contract DA-31-124-ORD-1 with the Office of Ordnance Research. Major assistance in gathering and preparing material for the Glossary was rendered by the Documentation Center **Acknowledgments** of Western Reserve University, under the supervision of J. W. Perry and Allen Kent. This work was done under Subcontract No. 1. Mr. G. E. Rogers of the Ordnance Engineering Handbook Office made many original contributions, in addition to assisting with the compilation and editing. Suggestions from individuals at the several Ordnance Corps installations have also been of great help in collecting terms and preparing definitions.

Many publications were studied or consulted in obtaining material for inclusion in the Glossary. The following were consulted freely: *Cataloging Handbook H6-1*; Department of the Army Technical Manuals, Supply Manuals and Supply Bulletins; Ordnance Corps Pamphlets of the Ordnance **Reference Publications** Engineering Design Handbook series; Air Force Stock Lists; United States Air Force Dictionary, 1956; Department of the Navy Ordnance Pamphlets; Glossary of Guided Missile Terms, 1949; Department of the Army Special Regulations 320-5-1, Dictionary of United States Army Terms, 1953; Nomenclature and Definitions in the Ammunition Area, 1 September 1958 Draft of Proposed Military Standard 444.

It is fully realized that the listing and defining of all the many thousands of terms of Ordnance interest is not feasible. What is desired is coverage of those terms and definitions which, in a glossary of practical **Suggestions for improvement solicited** size, will provide the greatest usefulness. With this purpose in mind, suggestions are solicited. For individual use in recording new terms and definitions, space has been left at the bottom of each page and several blank pages are provided following the printed pages. For convenience in submitting suggestions several prepared forms are included at the end. Suggestions will be welcomed in whatever form submitted, however, and should be mailed to the Ordnance Engineering Handbook Office, Box EM, Duke Station, Duke University, Durham, North Carolina.

Walker W. Holler
 Director, Ordnance Engineering Handbook Office
 Duke University
 3 March 1959

A

A (*abbr.*). 1. In such usage as M18A3, designates an accepted modification of standardized item. 2. In jato unit nomenclature, designates acid with fuel or asphalt with perchlorate propellant.

a (*abbr.*). 'Acceleration.'

A-4. The German official name for the V-2 missile.

AA (*abbr.*). 1. 'Antiaircraft.' 2. 'Antiaircraft artillery.' 3. 'Absolute altitude.'

AAA (*abbr.*). 'Antiaircraft artillery.'

AAC (*abbr.*). 'Antiaircraft common.' In ammunition nomenclature, indicates a common projectile, intended for antiaircraft purposes.

AAM (*abbr.*). 'Air-to-air missile.'

AB (*abbr.*). 'Air base.'

abbe prism erecting system. A prism erecting system in which there are four reflections to completely erect the image. It is composed of two double right-angle prisms which bend the path of light 360 degrees, displacing but not deviating the path of light.

abbr (*abbr.*). 'Abbreviation.'

abbreviation (*abbr.*). A short form of a word or phrase. Abbreviated 'abbr' in this glossary.

Use of both lowercase letters and uppercase letters is common practice, the particular choice being determined by the following rules:

1. If the abbreviation is to be used in telegraphic or other electronic transmission, it is uppercased throughout, since the equipment used in such transmission is not adapted to showing the lowercase.

2. The letters are usually uppercased throughout if they represent the several initial letters of key words in a phrase, as in 'SAM' for 'surface-to-air missile,' but there are exceptions, as in 'rpm.'

3. The letters are, or may be, lowercased if they are contractions of letters in a single word, in which case the initial letter may be capitalized if it is a proper noun, or if it is used at the beginning of a sentence or in a title.

4. The letters are, or may be, lowercased if two or more abbreviations of common words are joined together, as in 'avgas' for 'aviation gasoline.'

5. The letters may also be mixed between lowercase and uppercase, as in 'OrdC' for Ordnance Corps.

Two other rules should be mentioned:

6. A period at the end of an abbreviation, or periods between letters, are not commonly shown in practice within the services, but for a publication outside the services they may be used, depending upon the standards of the publication involved.

7. An abbreviation shown may, unless otherwise indicated, stand for any derived form of the word, as with *abbr* for abbreviation, abbreviate, abbreviated,

etc. These derived forms are not necessarily shown in the glossary.

ABC (*abbr.*). 'Atomic, biological, and chemical.'

Abel equation of state. An equation expressing in a form adaptable to the equations of interior ballistics the relationship among the pressure, the density, and the temperature of the gaseous products of combustion of the propellant. It is not an exact equation, but is sufficiently accurate for the interior ballistics calculations. It is expressed as

$$P \left(\frac{1}{\Delta} - \gamma \right) = nRT$$

where Δ = average gas density

η = co-volume of the gas

P = space-average pressure

T = absolute temperature

n = number of moles of gas per unit weight

R = gas constant.

Aberdeen chronograph. See: **chronograph**.

Aberdeen Proving Ground. (APG) Field installation of the Ordnance Corps, near Aberdeen, Maryland, with responsibility for conducting engineering (proof) tests of Ordnance materiel, for ballistic research and development, for operation of the Ordnance Training Command and the Ordnance Board, for collating Ordnance technical intelligence, and for human engineering studies.

Aberdeen screen. See: **chronograph**.

aberration. Any defect of a lens or optical system which causes the image to be imperfect. See: **astigmatism**; **chromatic aberration**; **coma**; **distortion**; **spherical aberration**.

ABMA (*abbr.*). 'Army Ballistic Missile Agency.'

abn (*abbr.*). 'Airborne.'

A-bomb. See: **bomb, atomic**.

absolute altitude. (AA) See: **altitude, absolute**.

absolute angle of attack. See: **angle of attack, absolute**.

absolute ceiling. See: **ceiling, absolute**.

absolute deviation. The shortest distance between the center of the target and the point where a projectile hits or bursts.

absolute error. 1. Shortest distance between the center of impact or the center of burst of a group of shots and the point of impact or burst of a single shot within the group. 2. Error of a sight consisting of its error in relation to a master service sight with which it is tested, including the known error of the master service sight. Relative error, which is a part of absolute error, includes only the error of a sight in relation to a master service sight.

absolute shrinkage. See: **shrinkage**.

absolute weapon. A theoretical weapon having the ultimate in destructive power. *Popular.* Also called **ultimate weapon.**

This term is sometimes applied to the atomic or hydrogen bomb.

absorption. The act or process by which an object or substance 'takes up' or 'soaks up' all the colors contained in a beam of white light except those colors which it reflects or transmits. Because of absorption, objects appear to have different colors; white objects have little absorption; other objects having varying powers of absorption appear to have different colors. For example, an object which appears red has absorbed all the colors of the spectrum except the color red.

AC (abbr). Chemical agent, 'hydrogen cyanide' (Prussic acid, war gas).

acceleration. (a) 1. *Mechanical.* The action or process of velocity increase; the rate of velocity increase, often measured in g's. 2. In physics, any change, or rate of change, of velocity, either increase or decrease.

Acceleration (sense 1) of a projectile, missile or aircraft may be linear or angular. Linear acceleration may be lateral, longitudinal, or normal (i.e., vertical); angular acceleration in a projectile, missile or aircraft is around one of its axes and may be pitch, roll, or yaw acceleration. Any increase in speed or any change in direction involves acceleration. See: **angular acceleration; linear acceleration.** Cf: **deceleration.**

acceleration, lateral. The component of the linear acceleration of an aircraft or missile along its 'lateral' or 'Y' axis.

acceleration, longitudinal. The component of linear acceleration of an aircraft or missile parallel to its 'longitudinal' or 'X' axis.

acceleration, normal. 1. The component of the linear acceleration of an aircraft or missile along its 'normal' or 'Z' axis. 2. The usual or typical acceleration.

acceleration, pitch. The angular acceleration of an aircraft or missile about its 'lateral' or 'Y' axis.

acceleration, rate of change of. Time rate of change of acceleration. A factor important in the design of some items.

acceleration, roll. The angular acceleration of an aircraft or missile about its 'longitudinal' or 'X' axis.

acceleration, yaw. The angular acceleration of an aircraft or missile about its 'normal' or 'Z' axis.

accelerometer. An instrument that measures acceleration.

This instrument can be variously designed to measure different components of acceleration.

ACCELEROMETER, GUIDED MISSILE. An instrument designed to measure one or more acceleration components.* Designed for use with guided missiles.

accelerometer, integrating. A mechanical and electrical device, usually installed in a guided missile or the like, which measures the forces of acceleration along

the longitudinal axis, records the velocity, and measures the distance traveled.

When installed in a rocket the integrating accelerometer may be preset to switch off the fuel flow when the required speed is reached.

acceptable quality level. (AQL) That degree of deviation from perfection which practical considerations of cost of manufacturing and cost of inspection and testing make it necessary to accept establishes the acceptable quality level. The AQL is expressed as the percentage of defective material which the methods of sampling and inspection risk accepting. Standard tables for sampling based on various AQL's are available.

acceptance criteria. Standards of judging the acceptability of manufactured (Ordnance) items. These standards consist of inspection plans and sampling plans, to be followed in the inspection process.

acceptance sampling. The sampling plan, based on an assumed acceptable quality level (which see) which will give the degree of risk of accepting defective material or rejecting acceptable material, which the inspecting agency judges to be necessary.

accessory. A supplementary part used in conjunction with an end item contributing to the effectiveness thereof without extending or varying the basic use of the end item.

access, random. Electronic computers. Access to storage under conditions in which the next position from which information is to be obtained is in no way dependent on the previous one.

access time. Electronic computers. 1. The time interval between the instant at which information is: (a) called for from storage and the instant at which delivery is completed, i.e., the read time; or (b) ready for storage and the instant at which storage is completed, i.e., the write time. 2. The latency plus the word-time.

accidental error. Unpredictable or chance error in the performance of any apparatus. Accidental error occurs particularly in gunfire or bombing, and is caused by mechanical, personal, or atmospheric variations. Accidental errors change from one time to the next; systematic errors are those which remain the same since they are due to faulty adjustment of an instrument or to some defect in it. See: **dispersion error.**

accommodation. Automatic adjustment of the lenses of the human eye for seeing objects at different distances. The process whereby the crystalline lens is adjusted to focus sharp successive images of objects located at various distances from the eye.

ACCOUNTING MACHINE. A machine designed to maintain bookkeeping records, such as fiscal accounting, budgetary accounting, payroll records, and billing, by printing the figures directly upon a prepared form, such as a ledger sheet or a bank book page, automatically spacing the figures in their proper columns. See also: **ADDING MACHINE; ADDING AND SUBTRACTING MACHINE** and **CALCULATING MACHINE.***

accumulator. 1. A device that stores fluid under pressure for momentary use at a time when additional energy is required.* In this sense sometimes termed 'pressure accumulator.' 2. *Electronic computers.* A device which stores a number and, upon reception of a new number, adds it to the previous contents and stores the sum. An accumulator may have properties such as shifting, sensing signs, clearing, complementing, and so forth.

ACCUMULATOR, HYDRAULIC. An accumulator that stores liquid under pressure.*

accuracy. The quality of correctness or freedom from error. Distinguished from 'precision' as in the examples: (a) '... this procedure measures the precision (reproducibility) of the test, not its accuracy (closeness to the true value).' (b) A four-place table correctly computed is more accurate but less precise than a six-place table containing errors. See also: **accuracy of fire and precision.**

accuracy life. The estimated average number of rounds that a particular weapon can fire before its tube becomes so worn that its accuracy tolerance is exceeded. Cf: **barrel life.**

accuracy of fire. The measurement of the precision of fire expressed as the distance of the center of impact from the center of the target.

acft (abbr). 'Aircraft.'

achromatic. *Optics.* Without color. See also: **achromatic lens.**

achromatic lens. A lens consisting of two or more elements, usually made of crown and flint glass, which has been corrected for chromatic aberration with respect to two selected colors or wave lengths of light. See: **compound lens.**

acid proof coating. Material in liquid form suitable for application (by spraying) to the wall of shell or bomb cavities to protect the metal from attack by explosives or other shell fillers. Generally consists of acid resistant materials, such as high-melting-point asphalt, in solution in volatile, non-toxic solvent. Also called 'acid proof paint.'

acid wash. A wash applied to steel parts (Ordnance) after machining and treatment for removal of grease. The acid wash, using a solution of phosphoric acid, removes and neutralizes the alkaline solutions used for grease removal. It also leaves a metallic phosphate coating, which accepts paint well, and of itself provides a degree of protection against rust.

ack-ack. [Orig. among British signalmen, a word used for the letters 'AA.'] Antiaircraft; antiaircraft artillery; antiaircraft fire.

Ackerman steering. The steering-system design that permits the front wheels to round a turn without side-slip by turning the inner wheel in more than the outer wheel.

acoustic mine. See: **mine, acoustic.**

acoustics. The science of sound, including its production, transmission, and effects.

ACOUSTIC SYSTEM, UNDERWATER MINE. A

group of electrical items specifically designed to give audible and graphic signals of underwater sound. It is used as a signaling system to detect a ship approaching a harbor.*

acoustic velocity. The velocity of sound waves, or similar waves, in a given medium.

In dry air at 0° C, the velocity of sound is about 1,087 feet a second; in water at 8° C, about 4,708 feet; in steel, about 16,400 feet.

acoustic wind. A fictitious wind constant in velocity and direction which is assumed to have the same effect on a sound wave as the winds actually encountered.

acquisition and tracking radar. A radar set which locks onto a strong signal and tracks the object emitting the signal.

An acquisition and tracking radar may be airborne or on the ground.

acquisition radar. A radar of shorter range but of greater accuracy than that of the surveillance radar; its normal function is to acquire targets on direction from a surveillance radar, or by independent search, and to transfer these targets to tracking radar.

activated mine. See: **mine, activated.**

ACTIVATOR, ANTITANK MINE. A nonmetallic item designed to adapt a firing device to an antitank mine. It may be empty, inert filled, or explosive filled.*

active defense. Term used to denote the employment of limited offensive action and counterattacks to deny a contested area or position to the enemy.

active homing. Homing in which the homing device reveals its presence. See: **homing.**

actuated mine. See: **mine, actuated.**

actuator. Part of the receiver mechanism in certain types of automatic weapons; *trigger actuator.* The actuator slides forward and back in preparing each round to be fired.

ACTUATOR, ELECTRO-MECHANICAL, LINEAR. A self-contained power transmitting device designed to convert electrical energy into controlled mechanical force, in the form of linear (straight line) mechanical movement. Comprised of an electric motor(s), gear box(es), screwjack(s), limit switch(es) and such accessories as required for the specific moving and positioning of other components. Excludes hydraulic and pneumatic cylinders and screwjacks.*

ACTUATOR, ELECTRO-MECHANICAL, ROTARY. A self-contained power transmitting device designed to convert electrical energy into controlled mechanical force, in the form of torque (rotational mechanical movement). Comprised of an electric motor(s), gear box(es), limit switch(es), and such accessories as required for the specific moving and positioning of other components. Excludes hydraulic and pneumatic cylinders and screwjacks.*

ACTUATOR, EXPLOSIVE, LINEAR. A self-contained power transmitting device designed to convert chemical energy into controlled mechanical force in

the form of linear mechanical movement. It is comprised essentially of a piston, powder charge, electrical bridge wire and contacts inclosed in a housing.*

acuity. Keeness; sharpness; as **stereo-acuity**; **visual acuity**.

A damage. See: **damage categories**.

adamsite. (DM) See: **CHEMICAL AGENT, DI-PHENYLAMINECHLOROARSINE** (DM).

adaptability test. Test conducted to ascertain the adaptability of a standardized item of equipment to a particular unit or organization. An adaptability test differs from a user test in that the latter is conducted prior to standardization and tests the suitability of the equipment for service.

adapted for VT fuze. Indicates that the munition has a cavity for the fuze, usually with a liner, with dimensions such that it will receive a **FUZE, PROXIMITY**.

adapter. 1. *Mechanical.* Any modifying part, piece, or device, designed to facilitate connection, provide accommodation, enable application, and to broaden or permit the use of a given item with an unlike item of mechanical equipment when the two items are not designed for direct mating to each other.

2. *Electrical.* An item which provides the necessary accommodations to electrically connect two or more items whose design or function will not normally permit their connection. It may also provide mechanical connection.*

ADAPTER, ADJUSTABLE, TRAILER TO GUIDED MISSILE COMPONENT. An adjustable item specifically designed to establish the necessary accommodations, and secure a guided missile, or guided missile rocket motor to a flat bed trailer. May include necessary adjusting tool(s).*

adapter, ammunition chute box. For aircraft guns, a unit rigidly attached to the ammunition box serving as a connector between the flexible or fixed feed chute and the box.

adapter, ammunition chute gun. For aircraft guns, a unit rigidly attached to the gun, serving as a connector between the flexible feed and the gun.

ADAPTER-BOOSTER AND ADAPTER-BOOSTER HOLDER ASSEMBLY. A device consisting of an **ADAPTER-BOOSTER, BOMB**, and a circular threaded metal housing. It is designed to hold and position an **ADAPTER-BOOSTER, BOMB** in a bomb body.*

ADAPTER-BOOSTER, BOMB. A device designed to accommodate an **ADAPTER, FUZE** and an auxiliary explosive charge used in an explosive train to detonate a bomb. It is essentially a reducing bushing threaded on the outside for assembly in the bomb body and on the inside for receiving a fuze and has assembled thereto an auxiliary explosive charge.* May be designed for use in the nose or in the tail of a bomb.

adapter, cluster, aimable. An **ADAPTER, CLUSTER, BOMB** used to hold the bombs together in an outer case so as to enable aiming and dropping the bombs

by ordinary bombing methods. Its ballistic characteristics are such as to permit application of normal aiming and dropping techniques and to confine the dispersion of contained bombs to a smaller target area than is experienced in the case of nonaimable adapters. See also: **cluster, aimable**.

ADAPTER, CLUSTER, BOMB. A mechanical device by means of which several bombs are suspended in the bomb station for one bomb.*

ADAPTER, CLUSTER, ROCKET. A mechanical device by means of which several rockets are suspended in the rocket station for one rocket.*

ADAPTER, FIRING MECHANISM. An adapter designed to facilitate the mounting of a firing-mechanism in an underwater mine.*

ADAPTER, FUZE. An adapter designed to connect a fuze to a bomb. It may or may not provide connection for a parachute unit.*

ADAPTER, FUZE SETTER. An item designed to provide facilities to accommodate a **FUZE SETTER** in the time setting of various types of fuzes.*

ADAPTER, GRENADE PROJECTION. An adapter designed for attachment to a hand grenade to facilitate firing from a rifle and to stabilize the grenade in flight.*

ADAPTER, GUN MOUNTING, AIRCRAFT. An adapter of various designs with provisions to facilitate connection of a gun or guns to a mounting in an aircraft to obtain a desired result. It may incorporate gun-firing, recoil-shock absorbing, or vibration dampener mechanisms.*

ADAPTER, HOISTING, AIRCRAFT GUN. An item usually rigid in construction designed to be attached to a gun, cannon or the like to adapt it to an eye, ring or loop for hoisting.*

ADAPTER, HOISTING, BOMB. An item usually rigid in construction designed to be attached to a bomb to adapt it to an eye, ring or loop for hoisting.*

adapter, mount. Device to make a gun fit properly into a mount.

ADAPTER, PRIMING. An adapter designed to secure an electric or nonelectric blasting cap, a detonating cord, or a time blasting fuse in the activator well of a demolition charge.*

adapter, rocket. An adapter for launching rockets of different size from a launcher.

ADCC (abbr). 'Air defense control center.'

Adcock antenna. A vertical antenna, transmitting only vertically polarized waves with low-angle radiation. Five Adcock antennas are utilized in an Adcock radio-range station, four for transmission of radio-range signals, and one for voice transmission or for signal transmission to a radio compass.

add. A fire correction term used by observers in adjusting fires to indicate that an increase in range (so many yards) will follow and is desired.

ADDC (abbr). 'Air defense direction center.'

adder. *Electronic computers.* A device which can form the sum of two or more numbers, or quantities, impressed upon it.

adder, algebraic. *Electronic computers.* See: **algebraic adder.**

ADDING AND SUBTRACTING MACHINE. A machine designed to add a number of figures and subtract any figure automatically. It will not divide automatically. It may print the numbers on a tape, or indicate the figures in a single row of openings (dial) or multiple row of openings (dials) at top or bottom of the machine. See also: **ACCOUNTING MACHINE; ADDING MACHINE** and **CALCULATING MACHINE.***

ADDING MACHINE. A machine designed to add a number of figures. It will not subtract, multiply, or divide automatically. It prints the numbers on a tape. See also: **ACCOUNTING MACHINE; ADDING AND SUBTRACTING MACHINE** and **CALCULATING MACHINE.***

additive, propellant. Any material added to the basic formulation of a propellant composition, to accomplish some special purpose. Additives are used to improve stability, to reduce flash or smoke, to reduce erosion or coppering, and the like. In general, additives are present in small proportions, and do not affect the heat of explosion to an appreciable degree.

address. *Electronic computers.* Information (usually a number) which designates a particular location in a memory or storage device.

ADF (abbr). 'Auxiliary detonating fuze.'

adiabatic. Occurring without gain or loss of heat; a change of the properties, such as volume and pressure of the contents of an enclosure, without exchange of heat between the enclosure and its surroundings. *Adv. adiabatically.*

adiabatic flame temperature. As applied to interior ballistics calculation, the temperature which the gaseous products of combustion of the propellant would attain if maintained at constant volume and without loss of energy to the surrounding medium.

ADIZ (abbr). 'Air defense identification zone.'

adjacent-channel interference (receivers). Interference (which see) in which the extraneous power originates from a signal of assigned (authorized) type in an adjacent channel.

adjust. To correct the elevation and deflection of a weapon to place the center of impact on the target. See also: **adjustment.**

adjusted elevation. Elevation based on firing and computed to place the center of impact on the target.

adjusted range. 1. Range corresponding to adjusted elevation. 2. Range setting, based on firing, computed to place the center of impact on the target.

ADJUSTER, SLACK, BRAKE. A device used in an air or vacuum brake system of a vehicle, incorporating means for manual adjustments to eliminate the looseness in the linkage when brake lining-wear occurs.*

adjusting point. A distinctive terrain feature or some portion of the target at or near the center of the area upon which the observer wishes to place fire.

adjusting ring. Part of a fuze setter which engages

and adjusts the setting element on the fuze of explosive projectiles. The whole projectile is turned by the setting ring.

adjustment. 1. Placing parts, subassemblies or electrical circuits in proper working relation to each other. 2. **Adjustment of fire** (which see).

adjustment chart. Record of data in correcting or regulating gunfire; chart used in adjustment of gunfire.

adjustment correction. See: **arbitrary correction**; see also: **spot.**

adjustment of fire. The process of determining and applying corrections to firing data to bring the center of impact or of burst, or the cone of fire of automatic weapons, to the adjusting point and to keep it there.

administrative lead time. The time interval in days from the initiation of a purchase request to the date of contract.

adopted type. See: **type classification.**

ADT (abbr). 'Atomic damage template.'

Advanced Research Projects Agency. (ARPA) An agency acting under the Secretary of Defense in coordinating and directing such research projects as may be specially assigned.

advancement of forcing cone. 1. Wearing away of the metal of a gun tube at the forcing cone (which see) due to erosion by the hot gases which escape around the projectile. This results in the forcing cone advancing down the barrel. 2. The distance by which the forcing cone is advanced.

advancing fire. See: **assault fire.**

ADW (abbr). 'Air Defense Warning.'

AEC (abbr). 'Atomic Energy Commission.'

AEDC (abbr). 'Arnold Engineering Development Center.'

aerial. (aerl) 1. Of or pertaining to operations in the air or to aircraft. 2. *Specif.* Of weapons or missiles: Used in aircraft; launched, dropped or shot from aircraft. 3. An **ANTENNA.**

aerial bomb. See: **bomb, aerial.**

aerial burst. See: **air burst.**

aerial cannon. See: **aircraft cannon.**

aerial dart. A metal dart designed to be dropped from an aircraft. Also called **flechette.**

aerial delivery. Air movement of supplies and equipment in which unloading is accomplished by dropping from airborne craft, usually employing parachute suspension during fall. Synonymous with **airdrop.**

aerial delivery containers. Special containers, slings and packages for the delivery of supplies and equipment from aircraft in flight.

aerial mine. See: **mine, aerial.**

aerial observation. Observation of fire from aircraft.

aerial sound ranging. The process of locating aircraft by means of the sounds emitted.

aerial torpedo. See: **torpedo, aerial.**

aerl (abbr). 'Aerial.'

aero (*abbr.*). 'Aeronautic.'

aeroballistics. The ballistics of projectiles fired, dropped, or launched from aircraft.

Aerobee. Name given to a series of Air Force rockets designed to carry instruments for recording information on the atmosphere encountered at high altitudes.

aerodynamic. Pertaining to aerodynamics (which see). Hence, aerodynamical, aerodynamically.

Depending upon the noun modified, this adjective has many denotations, e.g.: 1. When applied to objects or surfaces that move through the air it means: Designed or built to react to the surrounding air as intended, as in *aerodynamic airfoil, brake, hull, or propeller*. 2. When applied to effects, qualities, or characteristics, it means: That result from the reaction of the moving object to the forces in the surrounding air, as in *aerodynamic drag, efficiency, or performance*. 3. When applied to ideas it means: Conceived in terms of the interplay of forces arising from an object moving through the air, as in *aerodynamic design, problem, or study*.

aerodynamic balanced surface. See: *balanced surface, aerodynamic*.

aerodynamic center. A point on a cross section of a wing or rotor blade, through which the forces of drag and lift are acting, and about which the pitching moment coefficient is practically constant.

aerodynamic chord, mean. See: *chord, mean aerodynamic*.

aerodynamic control. A control surface. So called because of the local aerodynamic forces created by its use.

aerodynamic force. A force acting on a body in motion through air or other gas, or in relative motion with respect to air or other gas, and arising from this motion.

aerodynamic heating. The heating of an aircraft or missile due to the friction of air, significant chiefly at high speeds.

aerodynamic lift. See: *lift* (sense 1).

aerodynamic missile. A missile provided with surfaces which produce lift during flight.

aerodynamic moment. A missile or projectile moving through the atmosphere is subject to aerodynamic forces. Any one of these forces which does not act through the center of gravity produces an aerodynamic moment or torque about the center of gravity. See: *aerodynamic force*.

aerodynamics. That field of dynamics concerned with the motion of air and other gaseous fluids, or of the forces acting on bodies in motion relative to such fluids.

aerodyne. Any aircraft that derives its lift in flight chiefly from aerodynamic forces, as the conventional airplane, glider, or helicopter. Cf: *aerostat*.

AEROGRAPH. A self-contained item which is carried aloft and while aloft senses, measures, and records all information for complete evaluation of one or more meteorological parameters.*

aerometeorograph. Instrument that records the pressure and temperature of the air, the amount of moisture in the air, and the rate of motion of the wind. An aerometeorograph designed to transmit its record by radio from a balloon is called a radio meteorograph.

aeropulse. A pulse jet; a device producing thrust intermittently, from intake of air, as distinct from hypopulse. See: *ENGINE, PULSE-JET*.

aerosol. A mixture of fine liquid or solid particles and the gas or air in which the particles are suspended, as smoke, fog, or dust.

aerostat. Any aircraft that derives its buoyancy or lift from a lighter-than-air gas contained within its envelope or one of its compartments. Airships and balloons are examples of aerostats. Cf: *aerodyne*.

aerostatics. The science that treats of the equilibrium of gaseous fluids and of bodies immersed in them.

AEW (*abbr.*). 'Airborne early warning.'

AF (*abbr.*). 1. 'Air Force' with specific reference to the United States Air Force. 2. 'Audio frequency.'

A-FA-H (*abbr.*). 'Aniline-furfuryl alcohol-hydrazine.'

AFB (*abbr.*). 'Air Force base.'

AFFTC (*abbr.*). 'Air Force Flight Test Center.'

AFM (*abbr.*). 'Air Force Manual.'

AFMTC (*abbr.*). 'Air Force Missile Test Center.'

AFOSR (*abbr.*). 'Air Force Office of Scientific Research.'

A-frame. An A-shaped or V-shaped support for lifting engines or other equipment.

A-FRAME, VEHICLE MOUNTING. An A-shaped item designed to be mounted on a vehicle to act as a support and/or extension for lifting objects with a hoist or winch.*

AFSWP (*abbr.*). 'Armed Forces Special Weapons Project.'

aft. At, near, or toward the rear of an aircraft, vehicle or vessel.

AFTERBODY AND TAIL, TORPEDO. A conical shaped item which includes the propulsion unit, starting mechanism, and control mechanism of a torpedo.*

afterburner. An auxiliary combustion chamber within, or attached to, the tailpipe of certain jet engines, in which hot unused oxygen of exhaust gases from fuel already burned is used to burn a second fuel and thus augment the temperature and density of the exhaust gases as they leave the tailpipe, with consequent increase in thrust.

afterburning. 1. Combustion that takes place in an afterburner. Also 'tailpipe burning.' 2. The irregular burning of certain rocket-engine fuels after thrust has ceased.

after burnt. As applied to interior ballistics, descriptive of the condition following the complete transformation of the solid propellant to gaseous form. As burning of the propellant usually is completed well before emergence of the projectile from the muzzle, the after burnt phase consists of the transformation of energy from the hot propellant gases at high

- pressure to the projectile, without the further addition of energy to the gases. See: **all burnt**.
- after jet effect.** Pertaining to functioning of shaped charge ammunition. Postulated issuing of the jet from the slug long after collapse of the liner is complete. Also called extrusion effect, toothpaste tube effect.
- after splintering.** As applied to interior ballistics, the time following the combustion of multiperforated grains to the point where the web-thickness has been burned through. At this point slivers of an approximately triangular shape are formed, which then burn. Because of the change in geometry, the change in the burning surface area at this point passes from increasing (progressive burning) to decreasing (degressive burning), making necessary corresponding change in the interior ballistics calculation method.
- AFV (abbr).** 'Armored fighting vehicle.' *British*.
- A/G (abbr).** 'Air-to-ground.'
- AGC (abbr).** 'Automatic gain control.' See: **gain control, automatic**.
- age harden.** A term having various applications. In metallurgy, it is applied to the gradual hardening of an alloy when maintained at a suitable temperature, which may vary from ordinary ambient temperature to a considerably elevated temperature. Its distinguishing feature is that the hardening occurs during the time at temperature, not as a result of sudden cooling, as is the case in quench hardening.
- The term is also used to indicate many different types of gradual hardenings, as, for instance, a lacquer or varnish may be said to age harden when it changes with time from a pliable coating to one which cracks when the base metal to which it is applied is deformed.
- agonic line.** Line passing through points having no magnetic declination.
- ahead.** The sensing of a tracer or burst which passes in front of a moving target, with reference to its course line.
- AIC (abbr).** 'Ammunition Identification Code.'
- aided matching.** Mechanical system for transferring firing or other data from a data transmission line to a gun data computer or other device. In aided matching, the power to position the receiving device to match the transmitted data is supplied wholly, or in part, by motor drives whose speed may be adjusted by means of matching handwheels.
- aided tracking.** A system, or the action, of tracking a moving object in bearing, elevation, or range (or any combination of these) by means of a semiautomatic radar tracking mechanism.
- The tracking mechanism requires some manual control.
- aided tracking mechanism.** A device consisting of a motor and variable speed drive which provides a means of setting a desired tracking rate into a director, or other fire control instrument, so that the process of tracking is carried out automatically at the set rate until it is changed manually.
- aided tracking ratio.** The ratio between the constant velocity of the aided tracking mechanism and the velocity of the moving target.
- aileron.** A control surface set into or near the trailing edge of each wing of an airplane, extending, when in the wing, toward the tip and usually within the contour of the wing. Used to control the rolling movements of the airplane.
- aileron angle.** The acute angle between the chord of an aileron moved from its neutral position and its chord in neutral position.
- The angle is positive when the trailing edge of the aileron is down, negative when up.
- aim.** 1. The pointing of a weapon at, or so as to bear upon, the object intended to be struck. 2. To point or direct a gun or other weapon so that its missile is expected to strike a target; to drop a bomb or mine at a target or place. Often construed with at.
- aimable cluster.** See: **cluster, aimable**.
- AIMING CIRCLE.** An instrument for measuring angles in azimuth and elevation in connection with gun firing and general topographic work. It is equipped with fine and course azimuth micrometers and a magnetic needle. The reticles and scales may be illuminated for night operation. Excludes **AZIMUTH CIRCLE** and **BEARING CIRCLE**.*
- aiming group.** Pattern made on a surface by a series of pencil marks that test the ability of a soldier to sight a gun properly; shot group. The soldier directs a small disk target to be moved until it is aligned with the sights of a gun in a fixed position. The position of the disk is marked by a pencil dot made through the hole in the disk. Three such dots make up an aiming group.
- aiming light.** See: **LIGHT, AIMING POST**.
- aiming point.** 1. An object or point on which the sight of a weapon is laid for direction, or on which an observer orients his observing instrument. 2. The point used by an aerial bombardier or pilot to determine the point of release of bombs, rockets, mines, torpedoes, etc.
- aiming post.** See: **POST, AIMING**.
- aiming post light.** See: **LIGHT, AIMING POST**.
- aiming post sleeve.** Striped, tubelike bag that fits over a lifting bar so that the bar has the appearance of, and may be used as, an aiming post.
- aiming silhouette.** Form of field target, usually the outline of a man, lying, kneeling, or standing. An aiming silhouette is usually used for small-arms practice.
- aiming stake.** See: **POST, AIMING**.
- AIR (abbr).** 'Air arming impact rocket.'
- air.** In artillery, the sensing by an observer to indicate a burst above the level of the base of the target.
- air adjustment.** Adjustment of fire based on air observation.
- air barrage.** 1. A barrage of exploding bombs dropped from aircraft. 2. An anti-aircraft barrage.
- air base.** (AB) 1. In the AF, an establishment,

comprising an airfield, its installations, facilities, personnel, and activities, for the flight operation, maintenance, and supply of aircraft and air organizations. 2. A similar establishment belonging to any other air force. 3. In a restricted sense, only the physical installation.

airborne. (abn) 1. a. Of equipment and other material: Carried or transported, by aircraft. b. Of a force or organization: Transported, or designed to be transported, by aircraft, as an *airborne infantry battalion*. See: *airborne infantry*; *airborne troops*. 2. Of an action or operation: Carried out with transport aircraft, as an *airborne drop*, *airborne exercise*, or *airborne landing*.

In sense 1. a, 'airborne equipment' often refers to equipment transported, or designed to be transported, by an aircraft, as distinguished from equipment installed in an aircraft as a part of its normal operating equipment, e.g., an airborne field artillery piece would be thus distinguished from an aircraft cannon. The latter is mounted in an aircraft.

airborne infantry. Infantry organized and trained to be carried by air to a battle area and landed by transport aircraft, as distinguished esp. from parachute infantry or troops. Also called 'air infantry.' Cf: *airborne troops*.

airborne rocket. See: *rocket*, *aircraft*.

airborne troops. Ground troops especially organized, trained, and equipped for airborne assault, landing by parachute or aircraft.

In some contexts, 'airborne troops' refers specifically to troops landed by aircraft, as distinguished from parachute troops; some other special contexts restrict the term to include only those troops landed by parachute or glider, as distinguished from those landed in powered aircraft.

air-breathing engine. An engine that uses or takes in air from the outside to oxidize its fuel, as distinguished esp. from a rocket motor or rocket engine.

air-breathing jet. A propulsion device which operates by taking in air and then ejecting it as a high-speed jet.

air burst. Any burst in the air, but usually having reference to the bursting of a projectile or bomb above the ground with resulting spray of fragments.

air-burst ranging. See: *high-burst ranging*.

AIR CLEANER, INTAKE. A device designed to prevent foreign particles from entering the air intake system of an internal combustion engine or air compressor. Excludes mufflers.*

air-cooled. Cooled by air. Said esp. of engines or machine guns.

air coordinates. A system of coordinates used in determining the forces acting on a missile. In this system the origin moves with the velocity relative to the ground that the air has in the vicinity of the missile. The air is then motionless with respect to the origin of air coordinates.

air cover. 1. The protection against attack, esp. air attack, given by airplanes to surface or airborne

forces. 2. The airplanes giving, or designated to give, this protection.

aircraft. (acft) 1. In a broad sense, any machine or craft designed to go through the air (including, in some instances, outer space), given lift by its own buoyancy (as with airships) or by dynamic reaction of air particles over and about its surfaces, or by reaction to a jet stream or other fluid jet. 2. *Restrictive.* A powered fixed-wing airplane.

aircraft ammunition. Ammunition specially designed to be shot, launched, or dropped from aircraft.

Ammunition such as small-arms or artillery ammunition, torpedoes, etc., adapted but not specifically designed for aircraft use, is not designated 'aircraft ammunition.'

aircraft axes. See: *axes of an aircraft*.

aircraft cannon. A cannon (which see) designed or modified for use in an aircraft.

aircraft carrier. A ship that carries airplanes, has a takeoff and landing deck, and is otherwise designed and equipped to serve as a base of operations for the airplanes. Often called a 'carrier.'

aircraft damage. See: *damage categories*.

aircraft engine. Any engine (which see) designed or modified for use in an aircraft.

aircraft flare. See: **FLARE, AIRCRAFT**.

aircraft machine gun. Any machine gun designed or adapted for use on, or by, an aircraft.

aircraft, pilotless. See: *pilotless aircraft*.

aircraft rocket. (AR) See: *rocket, aircraft*.

aircraft rocket launcher. A device attached to an aircraft for holding and launching aircraft rockets. See: *launcher*.

Various types of aircraft rocket launchers are normally identified by a word or term in parentheses identifying the kind of launcher as follows: *aircraft rocket launcher (automatic)*; *aircraft rocket launcher (displacement)*, a kind of launcher that swings rockets from carrying position into firing position; *aircraft rocket launcher (drop)*, a launcher that drops the rocket before ignition; *aircraft rocket launcher (full automatic)*, a kind of launcher requiring only operation of the firing switch to fire and launch a number of rockets automatically; *aircraft rocket launcher (post)*, a launcher carrying the rocket on a post or posts fitted to the rocket motor tube; *aircraft rocket launcher (rail)*, a launcher carrying the rocket on rails; *aircraft rocket launcher (semiautomatic)*, a launcher requiring operation of both feeding and firing switch; *aircraft rocket launcher (tree)*, a kind of launcher having a central stem with rocket-bearing branches; and *aircraft rocket launcher (tubular)*, a launcher carrying the rocket in, and launching it through, a tube.

aircraft weapon. A weapon used on, or by, an aircraft, esp. an aircraft cannon or machine gun.

air defense control center. (ADCC) Principal information, communications, and operations center from which all aircraft, antiaircraft, guided missiles,

- and air warning functions of a specific area of air defense responsibility are supervised and coordinated.
- air defense direction center.** (ADDC) Air operations installation (land based), subordinate to the air defense control center, from which aircraft, antiaircraft, antiaircraft artillery, surface-to-air guided missiles, rockets, and air warning functions of an active air defense subsector are controlled operationally.
- air defense early warning station.** An Air Force radar installation having the capability of extending functions assigned to an air defense direction center.
- air defense identification zone.** (ADIZ) Air space of defined dimensions within which the ready identification, location, and control of aircraft are required. These zones are delineated in radio facility charts or other appropriate military regulations.
- airdrop.** 1. An act or instance of aerial delivery or airdropping. Sometimes simplified to 'drop.' 2. To release or let fall parachute troops, equipment, or supplies from an aircraft in flight, as in an airborne assault or air-supply operation. Airdropping is usually, but not necessarily, done by parachute.
- AIR FLASK, TORPEDO.** A cylindrical item having various compartments for housing compressed air, fuel, water and/or chemicals, which when combined form the propelling charge of aerial and underwater torpedoes.*
- airfoil.** A surface or body, as a wing, propeller, blade, rudder, or the like, especially designed to obtain a reaction, as lift or thrust, from the air through which it moves.
In giving lift or thrust to aircraft, airfoils are adapted to **Bernoulli's principle** (which see).
- airfoil center of pressure.** See: **center of pressure.**
- airfoil profile.** An outline or silhouette of an airfoil seen from the side.
- airfoil section.** A cross section of an airfoil, taken at right angles to its longitudinal axis at any given point.
- Air Force Armament Center.** Air Force center concerned with test, evaluation and development of aircraft weapons, ammunition and fire control components and systems. Located at Eglin AFB, Florida.
- Air Force base.** (AFB) A geographical location that provides space for carrying out an operation, including facilities for offices, warehousing, accommodation of personnel, and usually for the takeoff and landing of aircraft, such location being under the jurisdictional control of the United States Air Force.
An Air Force base is so designated by Hq USAF. 'Base' is capitalized in specific names, as in 'Craig Air Force Base.'
- Air Force Flight Test Center.** (AFFTC) Air Force center concerned with flight testing and evaluation. Located at Edwards AFB, California.
- Air Force Missile Test Center.** (AFMTC) Air Force center for test and evaluation of missiles. Range instrumentation and facilities available for long range test firing. Located at Patrick AFB, Cocoa, Florida.
- Air Force Office of Scientific Research.** (AFOSR) USAF office with responsibility for basic research and fundamental investigations. It is located in Baltimore, Maryland.
- Air Force Special Weapons Center.** Air Force center concerned with research, test and evaluation of Air Force components of equipment related to atomic weapons. Located at Kirtland AFB, New Mexico.
- airframe.** The structural components of an airplane or missile including the frame work and skin of such parts as the fuselage, empennage, wings, landing gear (minus tires), and engine mounts.
- air-fuel specific impulse.** See: **specific impulse, air-fuel.**
- air-ground.** Of or pertaining to both air and ground forces, as in *air-ground communication, air-ground cooperation, air-ground exercise, air-ground liaison, air-ground operation, etc.*
- air inlet.** An entrance for air; *specif.*, the open front part of a jet engine for taking in air.
- air intake.** A scoop, duct, or the like for taking in air; an air inlet.
- air-launched.** Of a rocket, guided missile, or the like: Launched, or designed to be launched, from an aircraft in flight.
- air log.** A distance-measuring device used esp. in certain guided missiles to control range.
- air mile.** A nautical mile by air.
- air nose fuze.** See: **fuze, air nose.**
- airplane.** A mechanically driven fixed-wing aircraft, heavier than air, which is supported by the dynamic reaction of the air.
- airplane defense area.** In antiaircraft defense, a definitely defined area, beyond the range of friendly antiaircraft artillery guns, which is protected by pursuit aviation operating alone during daylight hours and in conjunction with antiaircraft artillery searchlights during hours of darkness.
- airportable.** Denotes equipment which can be carried in an aircraft with not more than such minor dismantling and reassembling as would be within the capabilities of user units. This term must be qualified to show the extent of air portability.
- air position.** In air navigation, the theoretical position of an aircraft or missile at a given moment, assuming it to have been unaffected in flight by wind. Also called 'no-wind position.'
- air position indicator.** A flight instrument that continuously indicates the air position of an aircraft in latitude and longitude or other coordinates.
The air position indicator utilizes pitot-static pressures and an electrical compass system, as the gyro flux-gate system, in its operation. The instrument also indicates true heading and the air mileage flown.
- air pressure fuze.** See: **fuze, air pressure.**
- air, refractive index of.** See: **refractive index of air.**
- Air Research and Development Command.** (ARDC) A major air command in the USAF that carries out the research and development activities required for the accomplishment of AF missions. Located at Baltimore, Maryland.

air resistance. The resistance of air against any body moving through it, as an airplane, bomb, or bullet.

air scoop. A device or part mounted on an aircraft or missile and open toward the front for taking in air during flight.

AIR SERVICER, GUIDED MISSILE, TRUCK MOUNTED. A truck mounted air servicer unit consisting of high-pressure air tanks, valves, gages, manifolds, hoses, reels and other necessary equipment specifically designed for supplying high-pressure air to guided missiles. Does not include an integral air compressor.*

air space. 1. See: **standoff.** 2. The space between the top of the propellant and the base of the projectile in the vertically positioned assembled cartridge.

airspeed. (a/s) The speed of an aircraft or missile measured along its longitudinal axis, relative to the air through which it moves either on the ground or in the air, or in the case of a wind tunnel, relative to the stream of air in which it is immersed, esp. as indicated or determined by instruments, correction, or calibrations, and expressed in statute miles per hour or in knots.

airspeed, calibrated. The airspeed as read from a differential-pressure airspeed indicator which has been corrected for instrument and installation errors. Equal to true airspeed for standard sea level conditions.

airspeed, equivalent. The product of the true airspeed and the square root of the density ratio ρ/ρ_0 . Used in structural design work to designate various design conditions.

airspeed head. Any instrument or device, usually a pitot-static tube, mounted on an aircraft for receiving the static and dynamic pressures of the air used by the airspeed indicator.

airspeed, indicated. The airspeed as indicated by a differential-pressure airspeed indicator, uncorrected for instrument and installation errors.

airspeed, true. Calibrated airspeed corrected for altitude effects, i.e., pressure and temperature, and for compressibility effects where high speeds are concerned. Not to be confused with **groundspeed** (which see).

air spot. The correcting adjustment of gunfire based on air observation.

airstream. A stream or flow of air, esp. the relative stream of air set up around or against an aircraft in flight, or the stream caused by the revolving propellers of an aircraft.

airstream engine. An engine that develops thrust from a rearward ejection of air. Now *rare*.

air supremacy. That degree of air superiority wherein the opposing air force is incapable of effective interference.

air-surface. Of or pertaining to both air and surface forces, as in *air-surface cooperation*, *air-surface operation*, *air-surface team*, etc.

air-to-air. Used or occurring between or among aircraft in the air, as *air-to-air bomb*, *air-to-air com-*

munication, *air-to-air firing*, *air-to-air missile (AAM)*, *air-to-air gunnery*, *air-to-air rocket*, etc.

air-to-ground. (A/G) Used or occurring between aircraft and the ground, as *air-to-ground communication*, *air-to-ground gunnery*, *air-to-ground interdiction*, *air-to-ground rocket*, etc.

air-to-surface. Used or occurring between aircraft and the surface, as *air-to-surface communication*, *air-to-surface missile*, etc. Cf: **air-to-ground**.

air-to-underwater. Used or occurring between aircraft and the underwater, as *air-to-underwater missile (AUM)*.

air vane. A vane that works in a flow of air, as distinguished from a jet vane.

al (*abbr.*) 'Aluminum.'

Alabama Ordnance Works. Ordnance Corps field installation for manufacture of explosives during an emergency. Located at Childersburg, Alabama.

Alamogordo bomb. The first atomic bomb detonated 16 July 1945 at Alamogordo, New Mexico. Sometimes called the 'Trinity bomb.'

ALARM, GAS ATTACK. A U-shaped tubular metal device equipped with carrying strap and a hand-operated striker. When struck it produces a ringing sound. It is usually carried and used by military personnel to sound an alarm when a gas attack is anticipated.*

ALARM, OVER RADIATION. An electrical warning unit which either contains the sensitive elements or accepts information from an external source and a warning device, such as a bell, buzzer, horn, siren or light, specifically designed to give an aural and/or visual indication when a predetermined level of radioactivity has been reached.*

alert. A state of readiness against impending danger, or for going into action. Hence, 'to be, or stand, on alert,' or 'to be at the alert.'

algebraic adder. *Electronic computers.* An adder which can form an algebraic sum.

ALIDADE, BINOCULAR, MARINE. An instrument for navigational or ordnance use, used in conjunction with, but does not include, a pair of binoculars to indicate the relative bearing of a target or object. It is usually fastened to a solid mounting with the zero degree position parallel to the center line of the ship on which it is mounted.*

ALIDADE, SURVEYING. An instrument consisting of a sighting device mounted on a graduated base, used for plotting the lines of a survey directly from observation.*

ALIDADE, TELESCOPIC, MARINE. A navigational instrument for mounting on a magnetic or gyro repeater compass. It incorporates a telescope containing a vertical reticle line enabling the operator to view a target and its relative bearing at the same time.*

align. In radio or electronics, to adjust circuit values in two or more resonant circuits or circuit functions, so as to obtain optimum design performance.

aligned. Of an explosive train: Arranged in such order that the detonation wave can propagate as required

for functioning. As pertains to shaped charge ammunition, the coincidence of charge axis and liner axis in order to give optimum performance.

ALIGNMENT CLIP, LEAF SPRING. A metal item designed to maintain alignment and to prevent lateral shifting of spring leaves. May be bolt or clinch type.*

ALIGNMENT FIXTURE, WARHEAD TO ROCKET. An item having some of the external physical characteristics of a warhead. It is normally used in lieu of the warhead while making adjustment to various handling devices required to mate the warhead to a rocket.*

ALIGNMENT SERVICE UNIT, MOTOR VEHICLE. A group of related components primarily designed for and used in the detection and correction of distortion of chassis for automotive rolling equipment. Consists of STRAIGHTENER, MOTOR VEHICLE FRAME, and at least one of the following: wheel balancer, front end alignment equipment, and/or axle housing straightening equipment.*

all aluminum. Indicates cartridge case is made entirely of aluminum. Used in nomenclature of shotgun type cartridges.

all-around fire. Capable of firing in any direction. Said of a weapon or mount when it has such capability.

all-around traverse. Turning in a complete circle in a horizontal plane. A weapon has all-around traverse when it can be turned 360° by its traversing mechanism.

all brass. Indicates cartridge case is made entirely of brass. Used in nomenclature of shotgun type cartridges.

all burnt. As applied to interior ballistics, denotes the time at which the propellant has been completely burnt. Prior to this event, the burning propellant is furnishing additional energy in the form of gas and heat. After this event, the after burnt condition exists, which see.

allowance. A prescribed difference in dimensions of mating parts. It is a minimum clearance (positive allowance) or maximum interference (negative allowance) which is intended between mating parts.

all way fuze. See: fuze, all way.

alpha particle. A particle, with a positive charge of 2, ejected at high speed from certain radioactive elements or isotopes, and identical with the nucleus of helium.

Alpha particles produce harmful physiological effects.

alpha radiation. The radiation of alpha particles.

alt (abbr). 1. 'Altitude.' 2. 'Alternate.'

alternate traversing fire. Method of covering a target that has both width and depth by firing a succession of traversing groups whose normal range dispersion will provide for distribution in depth.

altimeter. *Specif.* An instrument that measures altitude above a given reference level, as above the sea or ground.

Altimeters, for all practical purposes, are of two

kinds. One uses an aneroid barometer; the other uses radio or radar waves. See: aneroid; also altimeter, radar.

ALTIMETER, PRESSURE. A barometric type instrument which measures altitude above a given datum plane when adjusted to the correct altimeter setting number. Excludes ALTIMETER, SURVEYING.*

altimeter, radar. An absolute altimeter that by measuring the time lapse between transmission and return of a pulse of radio energy establishes distance from the surface. Also called a 'radio altimeter.'

ALTIMETER, SURVEYING. A barometric type instrument consisting of a pressure-sensitive element which contracts or expands in proportion to atmospheric pressure, connected through a linkage to a pointer. Its dial is graduated in units of linear measurement (feet, meters, etc.), to indicate differences of elevation only. Excludes ALTIMETER, PRESSURE.*

altitude. (alt) 1. The elevation of an object above a given level, as above the sea or ground, esp. as indicated or determined by instruments, corrections, or calibrations, and expressed in linear measure. 2. The vertical distance between any point in the atmosphere or air and a reference point on the earth's surface.

altitude, absolute. (AA) Altitude with respect to the surface of the earth as differentiated from altitude with respect to sea level. Sometimes referred to as radar or radio altitude.

altitude, critical. 1. In guided missile practice, the maximum altitude at which the propulsion system performs satisfactorily. 2. In aircraft terminology, the maximum altitude at which a supercharger can maintain a pressure in the intake manifold of an engine equal to that existing during normal operation at rated power and speed at sea level without the supercharger.

altitude, high. Altitude of over 15,000 feet. (For bombing.)

altitude indicator. Any device for indicating altitude.

altitude, low. Altitude between 900 and 8,000 feet. (For bombing.)

altitude, medium. Altitude between 8,000 and 15,000 feet. (For bombing.)

altitude, minimum. Altitude below 900 feet. (For bombing.)

altitude signal. The radio signals returned to an airborne electronics device by the ground or sea surface directly beneath the aircraft.

aluminized explosive. An explosive to which aluminum has been added. The aluminum, in flaked or powdered form, is incorporated into the explosive to increase the blast effect. Examples of aluminized explosives include ammonal, HBX's, and tritonal.

AM (abbr). 'Amplitude modulation.'

amatol. A high explosive made of a mixture of ammonium nitrate and trinitrotoluene (TNT). There are two main types, classified according to the per-

centage ratio of ammonium nitrate to TNT: 50-50 amatol, which is capable of being melt loaded (cast), and 80-20 amatol, which must be consolidated by pressing or extruding. This explosive has approximately the same explosive force as TNT and has been used as the bursting charge for projectiles and bombs when toluene, used in the manufacture of TNT, was in short supply.

amber star, cluster. Indicates, in the case of a SIGNAL, ILLUMINATION, GROUND, a cluster of several freely falling amber stars (lights).

amber star, parachute. Indicates, in the case of a SIGNAL, ILLUMINATION, GROUND, a single amber star (light), parachute supported.

ambient. Surrounding, encompassing, as in ambient air, ambient temperature, etc.

AMC (abbr). 'Air Materiel Command.'

American Ordnance Association. (AOA) A civilian association dedicated to scientific and industrial preparedness for the United States and especially concerned with the ordnance field.

American Table of Distances. Published data concerning the safe storage of explosives and ammunition. The pertinent regulations are given in the Ordnance Safety Manual, ORDM 7-224, and are known as **quantity-distance tables** (which also see).

ametropia. Any abnormal condition of the seeing power of the eyes, such as farsightedness (hypermetropia), nearsightedness (myopia), or astigmatism. An *ametropic eye* is one which, in a state of rest, does not form distinct images of objects on its retina.

Amici prism. Also called 'roof prism' and 'right-angle prism with roof.' A form of roof prism designed by G. B. Amici, consisting of a roof edge formed upon the long reflecting face of a right-angle prism. Used as an erecting system in elbow and panoramic telescopes. It erects the image and bends the line of sight through a 90-degree angle.

ammo (abbr). 'Ammunition.'

ammonal. A high explosive mixture, made of ammonium nitrate, trinitrotoluene (TNT), and flaked or powdered aluminum. When used as a bursting charge in projectiles, it produces high temperature and bright flash on detonation.

ammonium nitrate. One of the most insensitive and stable high explosives. Because of the difficulty of initiating detonation it is not used alone as an explosive, but has found use as an ingredient of binary explosives, dynamites and cratering explosives. **Amatol** (which see) is an example of the use of ammonium nitrate in a binary explosive.

ammonium perchlorate explosive. Any of several compositions consisting of ammonium perchlorate in combination with a high explosive and powdered metal. These produce good blast effect.

ammonium picrate. See: **Explosive D.**

ammunition. (ammo) [From *munition* by taking French *la munition* as *l'ammunition*.] 1. A generic term which includes all manner of missiles to be thrown against an enemy, such as bullets, projectiles,

rockets, grenades, torpedoes, bombs and guided missiles with their necessary propellants, primers, fuzes, detonators and charges of conventional explosive, nuclear explosive, chemical or other materials. 2. In the broadest sense the term is not limited to those materials to be thrown, nor to use against an enemy, but includes, in addition to the items and materials given in sense 1, all explosives, explosive devices, pyrotechnics and pyrotechnic devices. The purpose is not limited and includes, in addition to direct use against an enemy, such uses as illumination, signaling, saluting, mining, digging, cutting, accelerating, decelerating, separating, catapulting personnel or materiel, operating or stopping mechanisms, demolition, decoying, practice, training, guarding, game hunting and pure sport. 3. In the most restricted sense the term includes a complete round and all its components, that is, the material required for firing a weapon such as a pistol, rifle, or cannon, from which a projectile is thrown for inflicting damage upon an enemy. Generally the term is used or taken in its broadest sense (sense 2) unless a more restricted sense is indicated or is implied by the context.

ammunition, artillery. See: **artillery ammunition.**

ammunition belt. See: **belt, ammunition.**

ammunition booster. An electrically driven sprocket which conveys linked ammunition to a machine gun in a confined tract.

ammunition box. A box in which linked ammunition is folded and from which it can be fed into a machine gun.

ammunition carrier. 1. Vehicle that accompanies guns and carries ammunition for them. 2. Member of a gun or mortar squad who carries ammunition and helps load in actual firing.

ammunition chest. A receptacle, as on a caisson or gun-carriage, to contain ammunition.

ammunition color code. See: **color code.**

ammunition, complete round. See: **complete round.**

ammunition credit. Authority given an organization to draw a specified quantity of ammunition during a given period for a particular use. Ammunition credits are not used in combat zone below the army level.

ammunition data card. Identification card prepared for each individual lot manufactured, giving the type and composition of the ammunition and identifying its components by lot number and manufacturer. When necessary, may also include instructions for handling the ammunition.

ammunition day of supply. The estimated quantity of ammunition required per day to sustain operations in an active theater. It is expressed in terms of rounds per weapon per day for ammunition items fired by weapons, and in terms of other units of measure for bulk allotment ammunition items. Formerly termed 'day of fire.'

ammunition depot. A storage and supply depot for projectiles, bombs, or other ammunition.

ammunition dump. An ammunition storage point, usually established in the field for temporary use.

ammunition handler. 1. One whose primary duty is the handling and servicing of ammunition. 2. A soldier who prepares ammunition for firing and who, as a member of a weapons crew, assists in the final delivery of ammunition to the loader.

ammunition identification. Identification of ammunition by type, size, and manufacturer's symbol, lot number, and grade.

Ammunition Identification Code. (AIC) Superseded code symbol formerly assigned to each item of Army ammunition for identification and supply purposes, e.g., PSHBA. First two characters referred to the pertinent ordnance catalog, and the remaining three characters to the weapon group, type and model, and packaging. The **Department of Defense Ammunition Code** (which see) is now normally employed for the purposes indicated.

ammunition link. See: **LINK, CARTRIDGE.**

ammunition loading line. Group of facilities at an installation, comprising a series of buildings, equipment and necessary utilities to form a complete operating establishment for the assembly of the component parts of any one of a group of similar items of ammunition.

ammunition lot. A quantity of rounds or components, each of which is manufactured by one manufacturer under uniform conditions, and which is expected to function in a uniform manner. The lot is designated and identified by assignment of an ammunition lot number and preparation of an ammunition data card. See also: **ammunition data card; ammunition lot number; lot.**

ammunition lot number. Code number that identifies a particular ammunition lot. The number is assigned to each lot when it is manufactured. See also: **ammunition lot.**

ammunition pit. Hole or trench dug in the ground where ammunition is stored temporarily. An ammunition pit is usually near the gun from which the ammunition is to be fired.

ammunition point. See: **ammunition supply point.**

ammunition sling. A pack consisting of a container and a parachute, by means of which ammunition is dropped from aircraft for the supply of troops.

ammunition, small arms. See: **small arms ammunition.**

ammunition, subcaliber. See: **subcaliber ammunition.**

ammunition supply installation. Any organized locality maintaining stock records and operating for the reception, classification, storage, and issue of ammunition. It is a general term used to include depots, ammunition supply points, railheads, truckheads, dumps, distributing points, and all other installations where ammunition is received, stored, classified, or issued.

ammunition supply point. Advance point at which ammunition is available for distribution to using units or for distribution by a using unit to individuals or subordinate units.

ammunition, target practice. Ammunition used for target practice. It may or may not have a fuze and a spotting charge.

ammunition trailer. See: **TRAILER, AMMUNITION.**

ammunition truck. A metal frame, with wheels on it, that carries the projectile and powder charge for a large gun from the ammunition pit to the gun. It has a loading tray that fits into the breech recess of the gun so that the projectile can be slid into the gun.

amph (*abbr.*). 'Amphibious.'

amphibious. (*amph*) Of vehicles or equipment: Designed to be operated or used on either land or water.

amphibious mine. See: **mine, amphibious.**

amphibious pack. Oversea pack that will stand temporary immersion, extended open storage, and unusually rough handling.

amphibious tank. See: **tank, amphibious.**

amphibious tractor. (*amtrac*) Vehicle used for the movement of troops and cargo from ship to shore in the assault phase of amphibious operations, or for limited movement of troops and cargo over land or water. See: **LANDING VEHICLE, TRACKED.**

amphibious vehicle. A wheeled or track laying vehicle capable of operating on both land and water.

amplidyne. A generator used as a power amplifier in servosystems.

amplifier. A device which by means of electron tube(s), transistor(s), or similar items in conjunction with associated circuits, controls a local source of power. Its output characteristics are uniformly regulated to the input signal, but of a greater amplitude with respect to current and/or voltage.*

AMPLIFIER, AUDIO FREQUENCY. An amplifier for frequencies of 20 kilocycles and below.*

AMPLIFIER, AUDIO FREQUENCY-RADIO FREQUENCY. An amplifier for frequencies above and below 20 kilocycles.*

AMPLIFIER, ELECTRONIC CONTROL. A device, which by means of an electron tube or tubes enables an input signal or signals to control a local source of power. Its output signal is of greater amplitude than the input signal and has characteristics which are suitable for controlling or supplying power for the excitation of electric motors or similar devices. Includes devices commonly referred to as servo amplifiers, torque amplifiers and similar equipment only if these devices do not employ synchros and do not incorporate servomechanisms. Does not include items that can be classified properly as audio frequency, radio frequency, direct current or video amplifiers. For amplifiers that incorporate servomechanisms and employ synchros. see: **AMPLIFIER, SYNCHRO SIGNAL.**

AMPLIFIER, INTERMEDIATE FREQUENCY. An amplifier which is tuned to a single fixed frequency resulting from heterodyne action between a local oscillator frequency and a signal frequency introduced from an external source.*

AMPLIFIER, MAGNETIC. An item consisting of a **SATURABLE REACTOR** and rectifier(s) which is

used for amplification purposes. May include resistors, capacitors and/or other components.*

AMPLIFIER, RADIO FREQUENCY. An amplifier for frequencies above 20 kilocycles.*

AMPLIFIER, SYNCHRO SIGNAL. A device designed to increase the capacity of a synchro transmission system and to isolate reflected oscillations from the input synchro signal. It includes a control transformer, an electronic or magnetic amplifier, a servomechanism and one or more synchro transmitters. May include synchro receiver(s). For amplifiers that do not include synchros and do not incorporate servomechanisms, see: **AMPLIFIER, ELECTRONIC CONTROL**.*

amplifier, torque. See: torque amplifier.

amplitude. 1. *Physics.* The extent of a vibration. 2. a. *Electricity.* The maximum variation or departure from the average of an alternating current. b. *Electronics.* The greatest value of an alternating radio wave or the like in one direction, measured from zero.

amplitude modulation. (AM) A method of radio transmission in which the amplitude of the carrier wave is varied or changed.

AMSO (*abbr.*). 'Ammunition Shipment Order.'

amtk (*abbr.*). 'Amphibious tank.'

amtrac (*abbr.*). 'Amphibious tractor.'

AN (*abbr.*). In such usage as AN-M43A2, designates Air Force-Navy standard item.

analog. A physical system on which the performance of measurements yields information concerning a class of mathematical problems.

analog computer. See: computer, analog.

analysis by statistical method. Treatment of data resulting from a limited number of observations, by which attempt is made to predict the results which would be obtained from a very large, or infinite, number of similar observations.

analysis of fire. The study of previous anti-aircraft preparatory firings for the purpose of determining corrections which will improve fire for effect.

ANALYZER, GASOLINE ENGINE EXHAUST. An instrument designed to indicate the efficiency of gasoline engine carburetion by determining the air-fuel ratio and/or the completeness of combustion.*

ANALYZER, PARTICLE SIZE. A device designed to determine the size distribution of powdered materials below the 200 mesh sieve range. The method employed is an oscillating U-shaped tube and encased air jet to furnish the air required for separation. It is regulated in accordance with Stokes' law of fall for microscopic size particles.*

ANALYZER SET, ENGINE. A group of items used in the testing of exhaust, ignition, voltage, revolutions per minute, etc., of a gasoline or diesel engine.*

ANALYZER, SPECTRUM. An instrument specifically designed to measure the amplitude and frequency of the constituents of a complex electrical wave form. May include transducer mechanism for converting sound pressure into electrical energy.*

ANALYZER, TELEMETRIC DATA. A single component designed to amplify and separate into individual signals, meter and/or instrument data, into the form of electrical pulses which may be recorded by a telemetric data recorder.*

anastigmat. A compound lens corrected for astigmatism.

ANCHOR, UNDERWATER MINE. An item designed in various shapes to moor an underwater mine at a predetermined depth. It may contain various releasing and securing devices which can be manually fixed for use in any given depth of water.*

'and' circuit. *Electronic computers.* See: gate, sense 2.

ANEMOMETER. A self-contained item which senses, measures, and indicates the speed of the wind and/or total air movement. Excludes transmitting devices.*

aneroid. A disc-shaped metallic capsule from which all the air has been evacuated, which expresses its sensitivity to changes in atmospheric pressure by expanding and contracting.

The aneroid is the activating element in manifold-pressure gages and certain altimeters and barometers.

angle, aileron. The angular displacement of an aileron from its neutral position. It is positive when the trailing edge of the aileron is below the neutral position, negative when above.

angle, crab. The angle between the direction in which an aircraft is heading and its true course.

angle, depression. The angle measured downward from the horizontal to the axis of an airborne radar beam directed at a target. This is the complement of the incidence angle of the beam at the target plane.

ANGLEDOZER, EARTH MOVING. A broad, horizontal, metal, pushing blade with framework and equipment for mounting on the front of a motorized vehicle; used for moving earth and other materials to either side of the vehicle when the blade is set at a selected angle, or straight forward when the blade is set parallel to the front of the vehicle.*

angle, drift. The horizontal angle between the longitudinal axis of an aircraft and its path relative to the ground.

angle, elevator. The angular displacement of the elevator from its neutral position. It is positive when the trailing edge of the elevator is below the neutral position and negative when it is above.

angle, flight path. The angle between the flight path (which see) of an aircraft and the horizontal. Sometimes called 'flight path slope.'

angle, gliding. The angle between the flight path during a glide and a horizontal axis fixed relative to the earth.

angle of approach. 1. Angle between the line along which a moving target is traveling and the line along which the gun is pointed. The angle of approach is never greater than 90°. 2. The maximum angle of an incline onto which a vehicle can move from a horizontal plane without interference; as, for instance, from front bumpers.

angle of attack. 1. *Specif.* The acute angle between the chord of an airfoil, and a line representing the

undisturbed relative airflow. In British terminology also called 'angle of incidence.' 2. Any other acute angle between two reference lines designating the cant of an airfoil relative to oncoming air.

In sense 1, esp. in regard to a wing, this angle consists of the effective angle of attack plus the induced angle of attack, the two together imparting a given lift to an airfoil. See: angle of attack, absolute; angle of attack, critical; angle, zero-lift. In sense 2, see: angle of attack, effective; angle of attack, induced.

angle of attack, absolute. The acute angle between the chord of an airfoil at any instant in flight and the chord of that airfoil at zero lift.

angle of attack, critical. The angle of attack of an airfoil at which the flow of air about the airfoil changes abruptly in such a manner that lift is sharply reduced and drag is sharply increased. Also called the 'stalling angle of attack.'

angle of attack, effective. That part of a given angle of attack that lies between the chord of an airfoil and a line representing the resultant velocity of the disturbed airflow.

This angle is measured on a finite wing, but it has the same effective magnitude as that of an angle of attack for infinite aspect ratio measured on a theoretical airfoil between the chord and the direction of the undisturbed airflow. See: angle of attack for infinite aspect ratio.

angle of attack for infinite aspect ratio. In aerodynamic theory, an assumed angle of attack at which a given airfoil would produce a specified amount of lift if the airfoil were of infinite span, the angle being formed by the chord of the airfoil and a line representing the relative direction of the undisturbed airflow.

This angle is assumed to have a magnitude equal to that of the effective angle of attack for a finite airfoil; the latter, however, is real and forms its angle between the chord and the resultant velocity of disturbed airflow. The line representing the resultant velocity divides the angle between the chord and the line representing the undisturbed airflow. To produce the same amount of lift, an airfoil of finite span must be set at a greater angle of attack than would be necessary if the airfoil were of infinite span (or of infinite aspect ratio), since the downwash velocity produced by the airfoil-tip vertexes of the finite airfoil tend to reduce the lifting effectiveness of its angle of attack.

angle of attack, induced. That part of any given angle of attack over and above the effective angle of attack.

angle of attack, zero-lift. See: angle, zero-lift.

angle of cant. 1. In a spin stabilized rocket, the angle formed by the axis of a venturi and a line parallel to the longitudinal axis of the rocket. 2. Angle due to cant, which see.

angle of clearance. Angle between the line along which a gun or launcher is pointed at the target and the line along which the weapon must be pointed for a projectile or missile fired from it to clear any obstruction between the weapon and the target.

angle of convergence. 1. Angle through which any gun laid parallel to the base gun in a battery must be turned toward it in order to point at the target. 2. Angle formed by the intersection of the lines of sight from the two eyes or from the two eyepieces of an optical instrument or from two points of observation. In both meanings, also called angle of parallax. 3. See also: angular parallax.

angle of deflection. The horizontal clockwise angle between the axis of the bore of a gun and the line of sighting when a gun is laid for direction.

angle of departure. 1. The vertical angle, at the origin, between the line of site and the line of departure. 2. The maximum angle of an incline from which a vehicle can move onto a horizontal plane without interference; as, for instance, from rear bumpers.

angle of depression. See: depression angle.

angle of deviation. The angle through which a ray of light is bent by a refracting surface; the angle between the subtended path of an *incident ray* and the *refracted ray*.

angle of divergence. Angle through which any gun in a battery, laid parallel to the base gun, must be turned away from the latter in order to be properly aimed for direction. It is used especially by a machine gun battery, when fire is to be distributed over a target having width.

angle of drop. The vertical angle between the bore axis and the plane which contains the projectile, and perpendicular to the vertical plane through the bore axis. Use of the term 'vertical ballistic deflection' is preferred.

angle of elevation. 1. Vertical angle between the line of site and the axis of the bore. Thus the angle of elevation is the vertical angle above the line of site through which the axis of the bore must be raised so that the bullet (or projectile) will carry to the target. See: angle of departure and quadrant angle of departure. 2. In aerial gunnery, an acute angle between the bore axis of a gun and the horizontal. Called 'quadrant elevation' in ground gunnery.

angle of entry. Acute angle between the tangent to the trajectory at the point of impact of a bomb or projectile and the perpendicular to the surface of the ground or target at the point of impact. It is the complement of the **angle of impact** (which see). Also called angle of obliquity and angle of incidence.

angle-off. 1. The angular measurement between the line of flight of an aerial target and the gunbore sight line of an attacking aircraft. 2. The angle between the line of flight of an attacking airplane and the line of flight of an aerial target.

angle of fall. The vertical angle at the level point, between the line of fall and the base of the trajectory.

angle of flap (and flaperons). The acute angle between two planes defined as follows: one plane including the spanwise and chordwise reference lines of the flap or flaperon; the other plane including the spanwise and chordwise reference lines of the supporting wing.

- angle of glide.** The acute angle between the horizontal and the flight path of an airplane or missile as it descends in a glide.
- angle of impact.** The acute angle between the tangent to the trajectory at the point of impact of a projectile and the plane tangent to the surface of the ground or target at the point of impact. The complement of the angle of entry (which see).
- angle of incidence.** 1. Angle of entry, which see. 2. *Optics.* The angle between the normal to a reflecting or refracting surface and the incident ray. 3. *Electronics.* The angle between the direction of an electromagnetic wave and a line perpendicular to a reflecting surface struck by the wave. 4. In guided missile usage, same as angle of wing setting. In British terminology the angle of incidence is equivalent to the American term angle of attack.
- angle of inclination.** The angle between the horizontal and the tangent to the trajectory at any point.
- angle of jump.** Also called jump. Angle between the line of elevation and the line of departure. See also: vertical jump and lateral jump.
- angle of obliquity.** See: angle of entry.
- angle of orientation.** Applied to a projectile in flight, with the projectile axis at an angle, called the *angle of yaw*, to the direction of projectile motion. The angle between the plane determined by the axis of the projectile and the tangent to the trajectory (direction of motion) and the vertical plane including the tangent to the trajectory is called the *angle of orientation*.
- angle of parallax.** See: angle of convergence; parallax.
- angle of pitch.** The acute angle between the longitudinal axis of an aircraft or missile and its line of travel, looked at from the side.
- angle of reflection.** The angle between the normal to a reflecting surface and the reflected ray.
- angle of refraction.** The angle between the normal to the refracting surface at the point of contact and the refracted ray.
- angle of roll.** The acute angle between the lateral axis of an airplane or missile and the horizontal. The angle is positive when the port tip is higher than the starboard tip.
- angle of safety.** Minimum permissible angular clearance, at the weapon, of the path of a projectile or missile above friendly troops. The angle of safety is the angle of clearance increased enough to insure the safety of the troops. Also called safety angle.
- angle of shift.** Horizontal angle between the line joining the gun and the first target and the line joining the gun and another target. The angle of shift is the angle through which the gun must be turned to shift fire from the first target to another one.
- angle of site.** The angle of site is the vertical angle formed by the line of site and the base of the trajectory. The angle of site is plus when the line of site is above the base of the trajectory and minus when the line of site is below the base of the trajectory.
- angle of stability.** The minimum angle of elevation at which a gun carriage is stable when fired.
- angle of stabilizer setting.** The acute angle between the longitudinal axis of an airplane or missile and the chord of the stabilizer looked at from the side. The angle is positive when the leading edge of the stabilizer is higher than the trailing edge.
- angle of train.** Azimuth element of firing data furnished by a remote control system.
- angle of traverse.** 1. Horizontal angle through which a gun or launcher can be turned on its mount. 2. Angle between the lines from a gun or launcher to the right and left limits of the front that is covered by its fire, that is, the angle through which it is traversed.
- angle of wing setting.** The acute angle between the longitudinal axis of an airplane or missile and the root chord of wing looked at from the side.
- angle of yaw.** 1. The varying angle between the direction of motion of a projectile or missile and its axis. 2. The acute angle between the longitudinal axis of an aircraft and its line of travel, looked at from above. See: yaw.
- angle, zero-lift.** The angle of attack of an airfoil when its lift is zero.
- angular acceleration.** Acceleration around an axis, esp. around one of the axes of a projectile, missile or aircraft. See: acceleration.
- angular height.** The vertical angle between the line of site and the horizontal.
- angular parallax.** The angle between grid north and true north. This angle increases the farther the grid departs from the standard meridian.
- angular speed.** See: angular velocity.
- angular travel.** Angular distance covered by a moving target in a given time. It is equal to the angular velocity multiplied by the time of travel. Angular travel is measured in terms of the change of angle at the observing point during the time of travel.
- angular travel error.** The error which is introduced into a predicted angle obtained by multiplying an instantaneous angular velocity by a time of flight.
- angular travel method.** Method of calculating firing data based on the rate of angular travel of the target in direction and elevation. Angular travel method and linear speed method are two methods of computing firing data.
- angular unit method.** A method of adjusting anti-aircraft artillery gunfire, in which range deviations in mils obtained by a distant observer are converted into altitude corrections in yards, for application at the data computer.
- angular velocity.** Speed of a moving target, measured at the observing point in terms of the rate of change of the angular position of the target in direction and elevation; angular speed.
- angulator.** Mechanical device used to convert an angle measured in an oblique plane to its projection on the horizontal plane.

anisotropic. Exhibiting different physical properties when tested in different directions.

annealing. Originally a term used in connection with heat treatment of metals, to mean heating to a rather high temperature followed by a slow cooling. This definition still applies in the heat treatment of steel, as a method of softening the steel.

In connection with heat treatment of nonferrous, age-hardenable alloys, the term annealing is frequently used, either with or without qualifying adjectives, to indicate heating to a high temperature, regardless of the subsequent cooling cycle or the final effect on the physical properties of the material.

Anniston Ordnance Depot. Field installation of the Ordnance Corps, located near Anniston, Alabama.

ANNUNCIATOR. A signaling apparatus which operates electromagnetically and serves to indicate visually, or visually and audibly, whether a current is flowing, has flowed, or has changed direction of flow in one or more circuits. It is usually employed in connection with alarms, electric bells, or buzzers. See also: **ALARM** (as modified).*

anode. The positive electrode, used in the electroplating process, by which the electric current enters the plating bath on way to opposite pole. When made of the plating material, it maintains constant metallic content in the electrolyte through corrosion. Anode is the opposite to cathode.*

A-N radio range. A navigational aid that establishes four radial equisignal zones, a deviation from the zones being indicated by the audible Morse Code letters A or N and the on-course indication being a continuous tone.

ANTENNA. An item consisting of a conductor or system of conductors specifically designed to radiate and/or receive electromagnetic waves in free space. May include beam-forming devices, drive motors, synchros, and associated mechanical structure.*

antenna array. An antenna system consisting of a number of separate antenna wires either separately fed from the transmitter or acting as reflectors and directors.

antenna, artificial. A device which has the necessary impedance characteristics of an antenna and the necessary power-handling capabilities, but which does not radiate or receive radio waves. Sometimes called *dummy antenna*.

ANTENNA ASSEMBLY. An item consisting of two or more separately excited antennas on a common mounting or mounted on each other. Do not use for a single antenna which is merely complex or unusual in construction.*

antenna, corner reflector. An antenna consisting of a primary radiating element and a dihedral corner reflector.

antenna cross talk. A measure of undesired power transfer through space from one antenna to another. Numerically, antenna cross talk is the ratio of the power received by one antenna to the power transmitted by the other, usually expressed in decibels.

antenna, dipole. A special antenna with two poles,

each approximately one-quarter wave length long. Used chiefly in radar conical scanning.

antenna, dish. See: **dish, radar.**

antenna effect. *Old usage.* In a loop antenna, any spurious effect resulting from the capacitance of the loop to ground.

ANTENNA ELEMENT. An item which is a single conductor and is designed as a replaceable part of an antenna dipole or antenna.*

ANTENNA GROUP. Two or more components which provide facilities of a complete antenna system for radiating and/or receiving electromagnetic energy which do not operate as a set, but which may be added to or may be part of a set.*

antenna, horn. The flared end of radar wave guide, which has been matched to the surrounding space for efficient radiation of energy from within the guide to space.

ANTENNA-RECEIVER-TRANSMITTER GROUP, ACQUISITION. A search type radar capable of providing continuous surveillance for a DIRECTOR STATION GROUP, GUIDED MISSILE with the prime function of detecting, interrogating and designating targets. Automatically provides range and azimuth data to the ANTENNA-RECEIVER-TRANSMITTER GROUP, TARGET TRACKING for rapid transfer of target acquisition.

ANTENNA-RECEIVER-TRANSMITTER GROUP, MISSILE TRACKING. A collection of items, two or more being major electronic components, which are not capable of performing a complete operational function by itself, but which when used in a guided missile remote control system, will provide facilities for receiving and transmitting radar signals, including appropriate corrective guidance command signals to a missile in flight, and furnishing continuous missile position data to a computer and/or other sets of a RADAR MISSILE TRACKING CENTRAL. May include facilities for local control and/or monitoring, aligning, or leveling during installation.

ANTENNA-RECEIVER-TRANSMITTER GROUP, TARGET TRACKING. A collection of items, two or more being major electronic components, which is not capable of performing a complete operational function by itself, but which when used in a guided missile remote control system, will provide facilities for receiving and transmitting radar signals, and furnishing continuous target position data to a computer and/or other sets of a RADAR MISSILE TRACKING CENTRAL. May include facilities for local control and/or monitoring, aligning or leveling during installation.

antenna resistance. The quotient of the power supplied to the entire antenna circuit divided by the square of the effective antenna current referred to a specified point. Antenna resistance is made up of such components as radiation resistance, ground resistance, radio-frequency resistance of conductors in the antenna circuit, and equivalent resistance due to corona, eddy currents, insulator leakage, and dielectric power loss.

anthropometric data. Data, esp. measurements, concerning the human body. This type of data is prepared by the Human Engineering Laboratory and made available for consideration by design agencies in Ordnance design projects.

antiaircraft. (AA) Used, or designed to be used, against airborne aircraft.

antiaircraft artillery. (AAA) Projectile weapons with their related equipment such as searchlights, radar, etc., employed on the ground or on ships to strike at airborne aircraft (including ballistic and guided missiles).

'Antiaircraft artillery' is an inclusive term for cannon, small caliber automatic weapons, rockets, surface-to-air guided missiles, etc., together with the equipment used or required in connection with antiaircraft operations.

antiaircraft artillery analysis. See: **flak analysis.**

antiaircraft artillery area defense. A thoroughly organized and coordinated antiaircraft artillery defense of a definite area, which is protected by the mutually supporting fires of antiaircraft artillery guns and automatic weapons.

antiaircraft barrage. 1. A barrage of antiaircraft fire through which enemy aircraft are expected to fly. Sometimes called a 'predicted barrage.' 2. Less precisely, any concentration of antiaircraft fire. See also: **barrage.**

antiaircraft condition of readiness. The degree of operational preparedness of an antiaircraft unit deployed at onsite positions. Onsite positions may be either permanent or temporary. The conditions of readiness are indicated as follows:

battle stations—Applicable when attack is imminent or in progress.

standby—Applicable when attack is probable, but the defended area is not immediately threatened.

secure—Applicable when available information indicates attack is not probable or imminent. The minimum condition of readiness.

antiaircraft defense. The total defense on the ground or on ship employed against aircraft (including ballistic and guided missiles).

This defense includes AAA, barrage balloons, and AAA intelligence service.

antiaircraft director. See: **DIRECTOR, ANTI-AIRCRAFT WEAPONS.**

antiarmor. Of ammunition, bombs, bullets, projectiles, or the like: Designed to defeat armor and other resistant targets.

antidetontant. A substance added to gasoline to prevent detonation. Cf: **antiknock.**

antidisturbance fuze. See: **fuze, antidisturbance.**

antidrag. 1. Of structural members in an aircraft or missile: Designed or built to resist the effects of drag. 2. Of a force: Acting against the force of drag.

ANTIFOGGING COMPOUND. A compound of one or more basic chemicals with filler(s) and/or extenders, intended for the express purpose of preventing condensation of moisture on glass and other

transparent material such as lenses or windshields. When of specific chemical, see *specific chemical name*.*

ANTIFOGGING KIT. A group of items specifically designed for the application of a substance to glass surfaces, such as gas mask lenses, diver's helmet lenses, automobile windshields, and the like, to prevent fogging.*

ANTIFREEZE. Antifreeze is a chemical substance, compound or mixture which, when in aqueous solutions of prescribed proportion, will prevent freezing of watercooled cooling systems.*

antifriction device. Mechanism which reduces friction in pointing a gun. It operates by lifting the gun off the main bearings and supporting it, while it is being moved, on light, free-turning bearings.

antifriction mechanism. See: **antifriction device.**

antihandling fuze. See: **fuze, antidisturbance.**

antijamming. Of a device, method, system, or technique: That reduces or eliminates jamming.

antiknock. A substance, such as iso-octane, which may be added to gasoline, or used as a fuel itself, to prevent detonation in an engine cylinder. Cf: **antidetontant.**

antilift device. A device arranged to detonate the land mine to which it is attached, or to detonate another mine or charge nearby, if the mine is disturbed. The device causes detonation through a secondary fuze called an **ACTIVATOR, ANTITANK MINE.**

antimechanized defense. All means used for defense against armored combat vehicles. It may include such means as armored units, antitank weapons and grenades, field artillery, antiaircraft artillery ditches, traps, mine fields, and any other means available; antitank defense.

antimissile missile. An explosive missile designed to intercept and destroy another missile in flight. Popularly termed 'auntie.'

antipersonnel. (apers) Of projectiles, bombs, mines, grenades, or the like: Designed to kill, wound, or obstruct personnel.

antipersonnel mine. See: **MINE, ANTIPERSONNEL.**

antiremoval device. A device attached to a land mine to protect it against removal. Usually attached to the mine either on the bottom or on the side, designed to function when a pull is exerted on the mine at the time of removal, or when pressure is released from the device when the mine is lifted from its position. Detonation is by a secondary fuze called an **ACTIVATOR, ANTITANK MINE.**

antiricochet device. Device intended for attachment to bombs to prevent ricochet, with consequent loss of effectiveness and possible danger to the dropping plane. The device usually consists of a parachute unit, fuze adapter and fuze, and is attached to the tail end of the bomb. The bomb is slowed by the parachute, enabling the dropping plane to pass beyond the danger area before the bomb is detonated.

antisubmarine. Of equipment, mines or missiles: Designed to attack or destroy submarines.

antitank. (AT) Used, or designed to be used, against tanks.

antitank bomb. See: **bomb, antitank.**

antitank ditch. Deep ditch prepared as an obstacle to enemy tanks. It is also called 'tank ditch.'

antitank grenade. See: **grenade, antitank.**

antitank mine. See: **MINE, ANTITANK.**

antitank mine field. 1. Area in which antitank mines are planted to stop or slow down enemy tanks or other armored vehicles. 2. Pattern of antitank mines so placed as to stop or slow down the progress of enemy tanks or other armored vehicles.

antitank obstacle. Natural or manmade obstruction or barrier which will stop, slow down, or cause tanks or other armored vehicles to maneuver or change direction; tank obstacle. Antitank obstacles include ditches, wire rolls, concrete pillars, and blocks, etc.

antitank rifle grenade. See: **grenade, antitank.**

antitank rocket. See: **rocket, antitank.**

antitank weapon. Any weapon designed or suitable for use against tanks or other armored vehicles. Antitank rockets, antitank grenades, and antitank guns are examples of antitank weapons.

antitorpedo. (atorp) Of equipment, missiles and the like: Designed to combat or destroy torpedoes.

antiwithdrawal device. A device intended to function an item of ammunition if attempt is made to remove a fuze from the ammunition. May be an integral part of the fuze, or a separate unit. See also: **fuze, antiwithdrawal.**

anvil. The rigid metal part against which the explosive charge in a PRIMER, PERCUSSION is compressed by the blow of the firing pin.

AOA (abbr). 'American Ordnance Association.'

AOQ (abbr). 'Average outgoing quality.'

AOQL (abbr). 'Average outgoing quality limit.'

AP (abbr). 1. 'Armor-piercing.' 2. 'Ammunition point.'

APC (abbr). 1. 'Armor-piercing capped.' 2. 'Armored personnel carrier.'

APCBC (abbr). 'Armor-piercing capped, ballistic capped.'

APC-T (abbr). 'Armor-piercing with cap and tracer.'

apers (abbr). 'Antipersonnel.'

aperture. An opening or hole through which light or matter may pass. In an optical system, it is equal to the diameter of the largest entering beam of light which can travel completely through the system. This may or may not be equal to the aperture of the objective.

aperture of objective. *Optics.* The diameter of that part of the objective which is not covered by the mounting.

aperture sight. Sight without optics (lens) by which the target is viewed through a hole or aperture.

APF (abbr). 'Aircraft parachute flare.'

APG (abbr). 'Aberdeen Proving Ground.'

API (abbr). 1. 'Armor-piercing incendiary.' 2. 'Air position indicator.'

apical angle. In general the angle formed at the apex or tip of anything. As applied to projectiles, the angle between the tangents to the curve outlining the contour of the projectile at its tip, or for semiapical angle, the angle between the axis and one of the tangents. For a projectile having a conical tip, the cone apex angle.

APIT (abbr). 'Armor-piercing incendiary tracer.'

aplantic lens. A lens which has been corrected for spherical aberration and coma. It usually is also corrected for color.

apochromatic lens. A lens, usually consisting of three components of different kinds of glass (two crown glass elements, one flint glass element), which has been corrected for chromatic aberration with respect to three selected colors or wave lengths of light.

apogee. The point farthest from the earth of a missile's (or satellite's) free-fall elliptical track.

APP (abbr). 'Army Procurement Procedure.'

app (abbr). 'Appendix.'

apparent field. The apparent angular size of the field of view of an optical instrument, as seen through the instrument. See: **field of view.**

application of fire. Placing gunfire upon desired targets or upon a zone.

applied research. Research directed toward using knowledge gained by basic research to make things or to create situations that will serve a practical or utilitarian purpose.

Basic research discovered Bernoulli's principle; applied research adapted an airfoil so that lift is imparted in accordance with the implications of Bernoulli's principle. See: **basic research.**

applique armor. Material or attachment which can be installed on a tank to give it additional protection against kinetic or nonkinetic energy ammunition.

approximate vertical deflection angle. See: **vertical deflection angle.**

apron. 1. That portion of a superior slope of a parapet or the interior slope of a pit designed to protect the slopes against blast. 2. The hinged portion of a shield. 3. A removal screen of camouflage material placed over, or in front of, artillery guns. 4. A hard-surfaced area, usually paved, adjacent to a shop or the like, used to park, load, unload, or service vehicles. Often erroneously called a 'ramp' (which see).

APRON, FUELING, GUIDED MISSILE. An item specifically designed to cover an area surrounding a fuel inlet on a guided missile for the purpose of shielding the operator and protecting the missile during fueling operations.*

apron shield. See: **shield.**

AP-T; APT (abbr). 'Armor-piercing with tracer.'

AQL (abbr). 'Acceptable quality level.'

AR (abbr). 1. 'Aircraft Rocket.' 2. 'Army Regulations.' 3. 'Army.'

arbitrary correction. The correction of firing data or sound-locator data, applied to correct for observed errors after allowance has been made for all known causes of deviation; adjustment correction.

ARBOR, DEPTH CHARGE. An item designed to provide a means of launching and supporting of a depth charge in a depth charge gun.*

archie. A WW I name for antiaircraft artillery. *Slang.*

ARDC (abbr). 'Air Research and Development Command.'

area bombing. Bombing a general area. Area bombing differs from precision bombing, which is bombing at a specific target, and from pattern bombing, which is systematic covering of a target according to a plan.

area defense. A defense against air attack organized to protect an area, as distinguished from a point defense or line defense.

area, drag. *Aerodynamics.* 1. The quotient of drag over incompressible dynamic pressure or over dynamic head. 2. The area of a flat plate producing an equivalent drag at a drag coefficient of 1.

area, effective. 1. *Aerodynamics.* The area of the wing (or tail) of an aircraft plus that portion of the area of the fuselage which is effective in producing lift. 2. The area within which a particular explosive munition is expected to do effective damage.

area, equivalent flat plate. *Obsolescent.* See: **area, drag.**

area, exposed. The area of the wing (or tail) outside the fuselage.

area fire. Fire delivered on a prescribed area. The term is applicable regardless of the tactical purpose of the fire, but area fire is generally neutralization fire.

area ratio of diffuser. See: **diffuser, area ratio of.**

area target. A target consisting of an area such as an entire munitions factory, rather than a single building or similar point target.

ARGMA (abbr). 'Army Rocket and Guided Missile Agency.'

arithmetic element. *Electronic computers.* That part of a computer which performs arithmetic operations. Sometimes called **arithmetic organ** or **arithmetic unit.**

arithmetic organ. *Electronic computers.* See: **arithmetic element.**

arithmetic unit. See: **arithmetic element.**

arm. 1. A combat branch of a military force. *Specif.* a branch of the Army, such as the Infantry, Armored Cavalry, or Artillery, the primary function of which is combat. 2. Weapon for use in war, usually in *pl.* 3. To supply with arms. 4. To make ammunition ready for detonation, as by removal of safety devices or alignment of the explosive elements in the explosive train of the fuze.

armament. (*armt*) 1. The weapons of an airplane, tank, ship, or the like; the weapons of a unit or organized force. 2. *pl.* War equipment, weapons, and supplies.

In sense 1, 'armament' denotes guns or rockets, but not aerial bombs or mines. In sense 2, the term is very broad and includes atomic, radiological, and bacteriological weapons, bombs, launching systems,

etc., together with handling, training, testing and other equipment.

armament error. Dispersion of shots from a particular gun; the deviation of any shot from the center of impact of a series of shots from a gun after all errors of personnel and adjustment have been accounted for.

armd (abbr). 'Armored.'

Armed Forces of the United States. Collectively, all components of the Air Force, Army, Navy, Coast Guard. Sometimes restricted to the first three.

Armed Forces Special Weapons Project. (AFSWP) An Armed Forces project organized to carry out certain functions connected with the military use of atomic energy not delegated to the Atomic Energy Commission.

The field command of this project is at Sandia Base, New Mexico.

armed mine. See: **mine, armed.**

armed service. 1. One of the three branches of the Department of Defense. 2. Usually *plural* and *capitalized*: The Armed Forces of the United States.

Armed Services Procurement Regulation. (ASPR) Uniform policies for the Departments of the Army, Navy, and Air Force relating to the procurement of supplies and services under the authority of Public Law 413, 80th Congress, or under other statutory authorization.

Armed Services Technical Information Agency. (ASTIA) See: **ASTIA.**

arming. As applied to fuzes, the changing from a safe condition to a state of readiness for functioning. Generally a fuze is caused to arm by such means as acceleration, rotation, clock mechanism, chemical action, electrical action, or air travel, or by a combination of these.

arming delay. See: **ARMING DELAY, BOMB FUZE; also delay.**

ARMING DELAY, BOMB FUZE. A mechanical, pyrotechnic or electrical device designed for attachment to a fuze to delay the start of fuze arming.*

arming device. Device for arming (which see) of a fuze under controlled conditions.

ARMING DEVICE, ROCKET WARHEAD. An item designed to arm and control the initiation of the explosive train of the warhead of a **ROCKET, HIGH EXPLOSIVE.** It may or may not contain a detonator.*

ARMING DEVICE, TORPEDO. An item designed to perform the electrical switching and mechanical alignment necessary to detonate a **WARHEAD, TORPEDO** after the warhead has been actuated by the exploder mechanism.*

ARMING DEVICE, UNDERWATER MINE. A hydrostatically operated device designed to arm an underwater mine at a predetermined time.*

arming distance. See: **arming range.**

arming pin. See: **pin, arming.**

ARMING PLUG, ANTITANK MINE. A device assembled to a **MINE, ANTITANK** after fuzing which

can be set to either a 'safe' position or an 'armed' position. In the latter position, sufficient pressure will cause the fuze to function.

arming range. The distance from a weapon or launching point at which a fuze is expected to become armed.

arming resistance. The resistance to the displacement of certain fuze components which must be overcome in order to arm a fuze. Arming resistance may be produced by the action of an elastic machine element, such as one or more arming springs, a split resistance ring, a spring plate, etc., or by the resistance to permanent deformation of a member, such as a shear pin. Arming resistance should be as great as possible to promote safe handling of fuzes and fuzed ammunition, yet should also be appreciably less than the force of setback or centrifugal action on the involved fuze components, to insure positive arming of the fuze during or after firing. See: **setback force; shear pin.**

ARMING WIRE AND SEAL ASSEMBLY, ATOMIC BOMB. An item consisting of one or more pullout wires and necessary seals, retainers or the like, to seal an opening through which they enter an atomic bomb case.*

ARMING WIRE ASSEMBLY. An item consisting of one or more lengths of wire attached to a swivel loop to prevent accidental arming of a fuze.*

ARM, MOORING. An arm designed to properly position an underwater mine in relation to the underwater mine anchor.*

arm of the normal force. Distance between the center of gravity and the center of pressure of a projectile in flight.

armor. 1. Any physical protective covering, such as metal, used on tanks, airplanes, etc., or on persons, against projectiles or fragments. See: **ARMOR, BODY, FRAGMENTATION PROTECTIVE; STEEL ARMOR PLATE.** 2. Armored units or forces. 3. In a weapon system, that component that gives protection to the vehicle or the weapon on its way to the target.

In sense 1, conventional steel armor is classified according to its physical and metallurgical structure as *face hardened* or *homogeneous*. It is also classified according to its method of fabrication as *cast* or *rolled*. In sense 3, the armor may consist of armor (sense 1) or any other protective device or technique, such as window, diversionary attack, speed, etc. See: **weapon system.**

armor backing. A support for armor plate set up in front of a gun for a ballistic test. It usually consists of a heavy timber framework, or a concrete and steel structure, or an arrangement of armor plates generally expended ballistically but still useful as supports. This supporting armor is usually imbedded in a concrete foundation.

ARMOR, BODY, FRAGMENTATION PROTECTIVE. Armor, especially designed to provide fragmentation protection to vital areas of the body. Usually provided in the form of garments which may contain steel, nylon or other resistant materials. See also: **INSERT, BODY ARMOR.**

armor butt. A combination of an armor backing with a sand butt.

armor castings. Type of armor frequently used when complicated shapes are involved. Such castings are made of high alloy steel and so heat treated as to have the properties of armor plate, and may be either the homogeneous or face-hardened type. See also: **armor.**

armor defeating. A term, similar to **antiarmor** sometimes applied to any of several types of ammunition, having for its principal purpose the defeat of armor protection of armored vehicles or ships. Types of such ammunition are *armor-piercing*, *HEAT*, *high explosive plastic*, etc.

armored. (armd) 1. Of vehicles or other equipment: Equipped with armor. 2. Of a military force: Provided with tanks and other armored equipment.

armored artillery. Self-propelled artillery, with some armor, organic to the armored division or organized as separate battalions.

armored car. See: **CAR, ARMORED.**

armored cavalry. Units organized and equipped to perform missions requiring great mobility, fire power, and shock action. The combat personnel are mounted in organic armed and armored vehicles (tanks, self-propelled weapons, and personnel carriers).

armored clothing. Clothing provided with or comprising protective armor. Cf: **ARMOR, BODY, FRAGMENTATION PROTECTIVE.**

armored personnel carrier. An armored vehicle which provides protection from small arms fire and shell fragments; used to transport personnel both on and off the battlefield. See: **CARRIER, PERSONNEL, FULL TRACKED; CARRIER, PERSONNEL, HALF TRACKED.**

armored vehicle. A wheeled or track laying vehicle mounting armor plate, used for combat security or cargo. Armored vehicles include tanks, personnel carriers, armored cars, self-propelled artillery and various special purpose vehicles.

armored vehicle damage. See: **damage categories.**

armor-piercing. (AP) Of ammunition, bombs, bullets, projectiles, or the like: Designed to penetrate armor and other resistant targets.

armor-piercing capped. (APC) Of armor-piercing projectiles: Having an armor-piercing cap over the nose. See: **cap, armor-piercing.**

armor-piercing projectile test. A test of armor-piercing projectiles by firing against armor plate of proved quality, usually at a range of 300 feet, the criterion being penetration of the plate at a prescribed velocity and angle of impact, without any substantial breaking up of the projectile.

armor plate. A plate of armor, which see, sense 1.

armor, spaced. See: **spaced armor.**

arm rack. See: **arms rack.**

arms. Weapons for use in war. Usually in *pl.*

arms chest. Box or base used as a portable locker for holding or transporting small firearms; arm chest.

arms locker. Chest, cupboard, or the like used for the safe keeping of small arms.

arms rack. Frame with shelves, niches, hooks, or similar devices, used to store small arms, to protect them, and to prevent unauthorized handling; gun rack.

armt (abbr). 'Armament.'

army. 1. The land military forces of a nation. 2. A unit of the U. S. Army made up of two or more army corps. 3. *Capitalized.* Short for 'United States Army.'

Army-Air Force. Pertaining to both the Army and the Air Force.

army artillery. Artillery assigned or attached to an army and retained under direct army command.

Army Ballistic Missile Agency. (ABMA) Ordnance Corps agency under the U. S. Army Ordnance Missile Command. Has responsibility for the development and procurement, and necessary accompanying activities, for Army ballistic missiles.

Army complete penetration. Penetration in which it is possible to see light through the hole made by the projectile or in which it is possible to see a portion of the projectile in the plate when viewed from the rear.

Army of the United States. (AUS) During WW II, a common designation for the overall army forces of the US, including the Regular Army, the National Guard of the United States, the Army Air Forces, and other components created for war purposes. Often abbreviated 'AUS.'

Army Rocket and Guided Missile Agency. (ARGMA) An agency operating under the U. S. Army Ordnance Missile Command. Responsible to that command for control and coordination of free rocket and guided missile activities of the Army. Located at Redstone Arsenal, Alabama.

Arnold Engineering Development Center. (AEDC) Air Force center concerned with engineering development. Located at Tullahoma, Tennessee.

aromatic fuel. A fuel in which the chief chemical compound has a benzene ring structure, used esp. in jet aircraft.

ARPA (abbr). 'Advanced Research Projects Agency.'

arrow projectile. See: *projectile, arrow.*

arrow stability. See: *stability, arrow.*

arsenal. 1. Installation whose primary mission is research, development and manufacture pertaining to assigned items or components. It may also conduct storage and issue operations incident to production activity. 2. Installation having co-equal missions of maintenance and supply for assigned items or components.

arsine. (SA) One of the blood gases. A war gas. Arsenic trihydride.

artificial horizon. 1. A device that indicates the attitude of an aircraft with respect to the true horizon. 2. A substitute for a natural horizon, such as a liquid level, pendulum, or gyroscope, incorporated in a navigating instrument.

artillery. (arty) 1. *Artillery piece.* Gun or rocket launcher, with mounting, too large or too heavy to be classed as a *small arm* (which see). The lower limit of size or caliber varies somewhat within the Armed Services, but within the Ordnance Corps the term is presently applied to any gun or launcher which uses ammunition of a caliber greater than one inch and which is not designed for hand or shoulder use. 2. *Artillery Corps.* One of the organic corps or arms of the U. S. Army, so called because artillery weapons normally compose its principal armament.

Artillery is classified according to size as *light artillery; medium artillery; and heavy artillery.* See separate entries. See also: *cannon; gun; howitzer; mortar.*

artillery ammunition. Ammunition for cannon above 30 millimeters (1.181 inches) in caliber. Cf: *small arms ammunition.*

artillery annex. Information and instructions issued with an operation order to cover the details regarding the use of artillery. An artillery annex is issued to make the operation order clearer or to give further details which would make the operation order too long if it was included in the order.

artillery cart. A trailer that carries equipment used by artillery units for fire control, communication, and mapping. It is attached to field gun for traveling.

artillery gun book. Record book of a gun. It is used for keeping data on the performance, maintenance and inspection of a gun.

artillery mil. See: *mil.*

artillery of position. See: *fixed artillery.*

artillery preparation. Heavy artillery fire delivered before an attack to disrupt communications and disorganize the enemy's defense.

artillery survey. The process of determining, with sufficient exactness, the relative horizontal and vertical locations of the pieces and targets so that they may be plotted on the firing chart, and of providing accurate data for the pieces.

ARTILLERY TOWING ATTACHMENT, TRACTOR MOUNTING. An item constructed of a steel framework and consisting of parts such as nuts, bolts, shims, and brackets for the mounting on the rear of a tractor. It is equipped with a coupler and is designed for the towing of wheel mounted artillery equipment.*

arty (abbr). 'Artillery.'

ARV (abbr). 'Armored recovery vehicle.'

a/s (abbr). 'Airspeed.'

ASA (LOG) (abbr). 'Assistant Secretary of the Army (Logistics).'

ascending branch. That portion of the trajectory between the origin and the summit. On this branch, the projectile climbs and its altitude constantly increases.

A-scope. A radarscope that presents the target range by a vertical deflection of the time base, or, in certain modified versions, by a horizontal deflection.

ashcan. A depth charge. *Slang.* See: **CHARGE, DEPTH.**

Askania. The name of a German company which manufactured theodolites and other precision instruments. The term is used to designate such instruments.

ASM (abbr). 'Air-to-surface missile.'

ASP (abbr). 'Ammunition supply point.'

Asp. [Coined: atmosphere sounding projectile.] A Navy high-speed rocket especially designed for studies of the upper atmosphere.

aspect angle. The angle formed between the longitudinal axis of a projectile in flight and the axis of a radar beam.

aspect ratio. The ratio between the square of the span of an airfoil and its area.

aspect ratio, chamber. The ratio between the length of a combustion chamber and its diameter.

ASPHALT, PETROLEUM. A brown to black bituminous residue, obtained artificially from certain petroleum, which is insoluble in water, but soluble in lighter petroleum fractions. It may be further processed by fluxing or emulsifying or by addition of flux and filler to form end products, such as cutback, emulsion, waterproofing and damp-proofing, and the like.*

ASPHALTUM COMPOUND, EXPLOSIVES CASE LINING. An asphalt base compound, completely compatible with high explosives, with a maximum acidity and a maximum alkalinity of 0.01%, formulated for use as a protective lining for fabricated metal cases into which charges of TNT, HBX-1, or HBX-2 are poured, particularly where crevices exist in wall cases. See also: **ASPHALT, PETROLEUM.***

ASPR (abbr). 'Armed Services Procurement Regulation.'

ASR (abbr). 'Available supply rate.'

assault. 1. Final phase of an attack; closing with the enemy in hand-to-hand fighting. 2. In an amphibious operation, the landing of troops for attack on the enemy's beach defenses. 3. In airborne operations, the landing of parachute and glider elements on unsecured and unprepared drop zones and landing zones to attack and seize an airhead. 4. A short, violent, but well-ordered attack against a local objective, such as a gun emplacement, a fort, or a machine gun nest.

assault fire. 1. Fire delivered by attacking troops as they close with an enemy to engage him at close range or in hand-to-hand fighting, usually delivered from the hip or the standing position at a sustained rate. 2. In artillery, extremely accurate, short range destruction fire at point targets.

assault gun. Any of various sizes and types of guns that are self-propelled or mounted on tanks and are used for direct fire from close range against point targets.

assemblage. A collection of items designed to accomplish one general function and identified and issued as a single item. An assemblage may be made up of items included in more than one class of sup-

plies and may include items for which logistic responsibilities are assigned to more than one technical service; e.g., Ponton Bridge, Baking Outfit, Fire Control Equipment, Tank, Tool Set and Tool Kit.

assemble. Put together the parts of a gun or other mechanism.

assembly. 1. A part or mechanism consisting of two or more separate component parts. An assembly is either separable or inseparable and may be either a subassembly or a principal assembly. 2. *Maintenance and supply.* A group of two or more physically connected or related parts which is capable of disassembly (carburetor, power pack, I.F. circuit, amplifier).

assembly drawing. A drawing upon which parts comprising an assembly are shown in proper position and relationship, or a drawing merely representing an assembly.

assignment. *Patent law.* The transfer of the entire interest in a patented invention or of an undivided portion of such entire interest. Cf: **grant; license; and exclusive license.**

assist. An act of providing **takeoff assist** (which see) to an airplane or missile.

astern. To the rear of an aircraft, vehicle or vessel; behind; from the back.

ASTIA (abbr). 'Armed Services Technical Information Agency.' A Defense Department agency, under administrative control of the Air Force, for collection and dissemination of technical information. The agency is best known by the abbreviation which is pronounced as a word.

astigmatism. 1. An aberration or defect of a lens which causes a point on the object to be imaged as a short line or pair of short lines. When two lines are formed, each is at a different distance from the lens and is at right angles to the other, and the lens has two points of principal focus. A sharp image cannot be secured at either focal point, and must be obtained at a point between the two focal points in a plane known as the circle of least confusion. This defect is caused by unsymmetrical curvature of the lens surfaces. 2. A defect of the human eye causing straight lines in a certain direction to appear blurred and distorted while lines in another direction may be well defined. This defect results when rays from a point at a certain angle are not brought to a single focal point on the image on the retina. It is caused by unsymmetrical surfaces of the cornea of the eye.

astigmatizer. Device attached to a range finder for observing small lights at night. An astigmatizer distorts a point of light into a band.

astronautics. The art and science of flying through space, or sending vehicles or missiles through space.

ASW (abbr). 'Antisubmarine warfare.'

AT (abbr). 'Antitank.'

ATAR (abbr). 'Antitank Aircraft Rocket.'

athodyd. [Coined from *aero thermo dynamic duct.*] *Generic.* A ramjet or pulsejet engine.

Atlas. A long-range ballistic missile, developed for

the AF. Utilizes liquid fuel with two boosters. Has inertial guidance.

atmosphere, standard. See: Standard Atmosphere.

atmospheric control. Any device or system designed to operate movable aerodynamic control surfaces to direct a guided missile in atmosphere dense enough for such controls to be effective; the control provided by such devices. Cf: nonatmospheric control.

atmospheric pressure. The static force of pressure exerted by the atmosphere in any direction in any part of the atmospheric envelope.

Atmospheric pressure is expressed in different ways, as at sea level, it is 76.0 centimeters of mercury, 29.92 inches of mercury, 33.9 feet of water, 14.66 pounds per square inch, 1,013.25 millibars, etc.

atmospheric stability. Term which describes air conditions. When there are many rising and falling air currents, the atmosphere is said to be unstable; when there are few or no currents, it is said to be stable.

atmospheric structure. Atmospheric characteristics including wind, direction, velocity, altitude, air density, velocity of sound.

ATO (abbr). 'Assist takeoff,' or 'assisted takeoff.'

atom. 1. The smallest particle of an element that enters into composition of molecules, or in which a balance exists between protons and electrons. 2. Short for 'atomic ammunition.'

atom bomb. See: bomb, atomic.

atomic. 1. Of a substance: That supplies energy, through nuclear reaction, as in *atomic pellet*. 2. Of energy: That is supplied through nuclear reaction, as in *atomic energy*, *atomic power*. 3. Of equipment: That utilizes atomic weapons or is used in the employment of atomic weapons, as in *atomic artillery*, *atomic bomber*, *atomic missile*, *atomic rocket*, *atomic warhead*. 4. Of vehicles or equipment: That utilize power delivered from atomic fission as in *atomic engine*, *atomic-powered plane*, *atomic vehicle*.

atomic air burst. The explosion of an atomic weapon in the air, at a height greater than the maximum radius of the fireball. Cf: *atomic surface burst*; *atomic underground burst*; *atomic underwater burst*.

atomic ammunition. Meaning formerly limited to ammunition deriving its explosive force from nuclear fission. Now generally accepted as including all ammunition which derives its explosive force from a chain reaction of active nuclear material.

atomic artillery. Artillery which is capable of firing atomic ammunition, which see.

ATOMIC BEAM FREQUENCY STANDARD. An item which provides one or more precise frequencies derived from an element such as cesium. Frequency determination is accomplished by measuring the nuclear magnetic moment of the element by resonant absorption techniques. When the element is acted on by an applied frequency at its atomic spectrum line frequency, the element will absorb a quantum of energy, indicating coincidence between the two frequencies. The applied frequency thus becomes a

standardized frequency, and may be utilized at its fundamental, or at harmonics thereof, for precise test and measurement of other equipment.*

atomic bomb. See: bomb, atomic.

atomic damage template. (ADT) A graphical representation for a given yield, height of burst, and map scale, showing a ground zero point surrounded by concentric circles or arcs depicting damage radii, including arcs for consideration of troop safety.

atomic defense. The methods, plans, and procedures involved in establishing and exercising defensive measures against the effects of an attack by atomic weapons or radiological warfare agents. It encompasses both the training for, and the implementation of, these methods, plans and procedures.

atomic device. Any explosive device that makes use of active nuclear material to cause a chain reaction upon detonation.

atomic energy. The energy generated by nuclear fission or nuclear fusion.

Atomic Energy Commission. (AEC) The civilian governmental agency, established by the Atomic Energy Act of 1946, to take over the organization and property of the Manhattan Project, and to supervise and control the production of nuclear-fissionable, radioactive materials in the United States.

atomic surface burst. Atomic missile burst at an elevation such that the fireball touches the ground. Cf: *atomic airburst*; *atomic underground burst*; *atomic underwater burst*.

atomic underground burst. The explosion of an atomic weapon with its center beneath the surface of the ground. Cf: *atomic air burst*; *atomic surface burst*; *atomic underwater burst*.

atomic underwater burst. The explosion of an atomic weapon with its center beneath the surface of the water. Cf: *atomic air burst*; *atomic surface burst*; *atomic underground burst*.

atomic weapon. Any bomb, warhead or projectile using active nuclear material to cause a chain reaction upon detonation. The term is synonymous with nuclear weapon, and includes fission and thermonuclear weapons.

atomization. *Specif.* The breaking down of fuel into minute particles as it is forced into the cylinder or combustion chamber of an engine under extreme pressure.

atorp (abbr). 'Antitorpedo.'

attained bandwidth. See: bandwidth, attained.

attenuate. *Electronic computers.* To obtain a fractional part or reduce in amplitude an action or signal. Measurement may be made as percentage, per unit, or in decibels, which is 10 times \log_{10} of power ratio; contrasted with amplify.

attenuator. A device for reducing the amplitude of a signal current.

ATTENUATOR, FIXED. A device for reducing the strength of an alternating current signal by a fixed or predetermined amount, without causing appreciable

signal distortion, by maintaining correct impedance match.*

ATTENUATOR, VARIABLE. A device for reducing the strength of an alternating current signal either continuously or in steps, without causing appreciable signal distortion, by maintaining substantially constant output and/or input impedance match. Continuously variable resistive devices must consist of at least two sections or one section with at least two rotating contacts. An ATTENUATOR, VARIABLE must have an overall attenuation rating. Includes tandem mounted variable resistors designed to function as an attenuator but whose terminals are not connected.*

attitude. The aspect that an aircraft or missile presents at any given moment, as determined by its inclinations about its three axes.

attitude control. *Specif.* A control system or mechanism, as an automatic pilot, that puts or keeps an aircraft or missile in a desired attitude.

attitude gyro. A gyro used in attitude control.

attitude of projectile. See: attitude.

audio. Pertaining to frequencies of audible sound waves between about 15 and 20,000 cycles per second.

audio frequency. (AF) *Electroacoustics.* Any frequency corresponding to a normally audible sound wave.

Audio frequencies range roughly from 15 to 20,000 cycles per second.

The word 'audio' may be used as a modifier to indicate a device or system intended to operate at audio frequencies, e.g., 'audio amplifier.'

augmentor. A duct usually enclosing the exhaust jet behind the nozzle exit section to provide increased thrust.

AUM (abbr). 'Air-to-underwater missile.'

auntie. Popular term for 'antimissile missile.'

aural radio range. A radio range, such as the loop-type radio range, in which the on-course signal is an aural signal only.

AUS (abbr). 'Army of the United States.'

autmv (abbr). 'Automotive.'

auto (abbr). 'Automatic.'

auto-fretage. A French term meaning 'self-hooping.' A method of gun manufacture by radial expansion, which see.

auto-loading. Self-loading. An auto-loading gun fires, extracts, ejects, and reloads once with each action of the firing mechanism.

automatic. (auto) *General.* Self-acting; moving or acting by itself. *Specif.* Of a weapon: After the first round is fired, an automatic weapon fires, extracts, ejects, and reloads without application of power from an outside source, repeating the cycle as long as the firing mechanism is held in the proper position. Automatic action involves repeating the cycle of operation, as distinguished from semiautomatic, which is restricted to one complete cycle at a

time. Examples of use: automatic firearm; —gun; —pistol; —rifle; —rocket launcher.

automatic breech mechanism. A device that utilizes the energy of recoil, or the pressure of the powder gases, to open the breech, withdraw the fired cartridge case, insert a new cartridge, and close the breech. After firing the first round, the only hand operation necessary for the firing of succeeding rounds is that of continuing to pull the trigger. Present usage of the automatic mechanism is restricted to guns of small caliber that use the small arms cartridge, or fire a projectile weighing not more than a pound. Machine guns have a breech mechanism of the full automatic type.

automatic feed mechanism. Mechanism in an automatic gun that puts fresh cartridges into the chamber in position for firing.

automatic fire. Continuous fire from an automatic gun until the pressure on the trigger is released. Automatic fire differs from semiautomatic fire of automatic weapons and from single shot fire of hand-loaded weapons in both of which a separate trigger pull is required for each shot fired.

automatic firearm. See: automatic.

automatic frequency control. A mechanism for providing continuous automatic adjustment to the tuning of the local oscillator of a radar receiver in order to maintain a constant beat frequency between the local oscillator and the transmitting tube.

automatic gain control. (AGC) See: gain control, automatic.

automatic gun. See: automatic.

automatic gun charger. A gun charger that includes a mechanism for the clearance of gun stoppages and the retention of the breech mechanism to the rear of the gun receiver.

automatic pilot. A control mechanism incorporating a gyroscope, which initiates corrections on the control surfaces of an aircraft to maintain a steady and preset course and attitude, without assistance from the human pilot.

Also called a 'copilot,' 'autopilot,' 'robot pilot,' and 'mechanical pilot.'

automatic pistol. See: automatic.

automatic rifle. See: automatic.

automatic rocket launcher. See: automatic.

automatic supply. System by which certain supply requirements are automatically shipped or issued for a predetermined period of time, based upon estimated or experience-usage factors, without requisition by the using unit. See: semiautomatic supply.

automatic tracking. Tracking in which a servomechanism keeps the radar beam trained on the target, by locking the servomechanism to the echo signal from the target.

automatic volume control. See: gain control, automatic.

automation. The entire field of investigation, design, development, application and methods of rendering or making processes or machines self-acting or self-

moving; rendering automatic; theory, art or technique of making a device, machine process or procedure more fully automatic; the implementation of a self-acting or self-moving, hence, automatic process or machine.

automobile. A self-propelled, wheeled vehicle, generally commercially designed, for transporting less than ten (10) passengers on highways and/or roads. Excludes bicycles, motorcycles, and motor scooters.*

AUTOMOBILE, AMBULANCE. A self-propelled wheeled vehicle with a sedan type body designed and equipped for rendering first aid, and transporting wounded, injured or sick persons. Excludes TRUCK, AMBULANCE.*

AUTOMOBILE, HEARSE. A self-propelled wheeled vehicle designed and equipped to convey the deceased for burial.*

AUTOMOBILE, SEDAN. An automobile with a sedan type body having full width front and rear seats. May have auxiliary seat(s).*

AUTOMOBILE, STATION WAGON. An automobile with a sedan type body primarily designed to carry personnel. It has horizontally hinged door and tail gate at rear to facilitate loading supplies and/or equipment into the passenger compartment. Excludes TRUCK, CARRYALL.*

autopilot. Short for 'automatic pilot.'

Autosyn. A Bendix Marine trade name for a synchro (which see), derived from the words 'automatically synchronous.'

aux (abbr). 'Auxiliary.'

auxiliary aiming point. Point or object used for laying a gun on a target that cannot be seen. The gunner adjusts the gun so that when the sight is aimed at the auxiliary aiming point the gun is laid on the target.

auxiliary booster. See: booster, auxiliary.

auxiliary detonating fuze. See: fuze, auxiliary detonating.

auxiliary power unit. A power unit that can be used in addition to, or in place of, other sources of power.

AUXILIARY SET, ENGINE DRIVEN. An item consisting of a prime mover driving two or more different types of items, such as generator(s), compressor(s) or pump(s). The components must be mounted as a single unit and may be used singly or simultaneously.*

auxiliary target. Point at a known distance from the actual target; registration target. An auxiliary target is used as an adjusting point before firing on the actual target. Fire is delivered and adjusted on the auxiliary target. When the adjustment is complete, the necessary correction is put on the gun to swing it over to the actual target. Auxiliary targets are used when fire on the actual targets is intended to surprise the enemy.

available conversion power gain (of a conversion transducer). The ratio of the available output-frequency power from the output terminals of the transducer to the available input-frequency power

from the driving generator with terminating conditions specified for all frequencies which may affect the result.

This applies to outputs of such magnitude that the conversion transducer is operating in a substantially linear condition.

The maximum available conversion power gain of a conversion transducer is obtained when the input termination admittance, at input frequency, is the conjugate of the input-frequency driving-point admittance of the conversion transducer.

average absolute pulse amplitude. *Electroacoustics.* The average of the absolute value of the instantaneous amplitude taken over the pulse duration.

By 'absolute value' is meant the arithmetic value regardless of the algebraic sign.

average outgoing quality. (AOQ) As applied to inspection procedures, the average quality of a succession of lots which have been accepted.

average outgoing quality limit. (AOQL) As applied to inspection procedures, the poorest average quality that the sampling plan and inspection methods being used will accept.

average pulse amplitude. *Electroacoustics.* The average of the instantaneous amplitude taken over the pulse duration.

average thrust. *Missile testing.* The average of the thrust values recorded during the web-burning time. It is computed as the quotient of thrust-time integral during the web-burning time, divided by the web-burning time.

avgas (abbr). 'Aviation gasoline.'

aviation gasoline. (avgas) Gasoline specifically prepared for use in aircraft.

avn (abbr). 'Aviation.'

Avogadro's law. Equal volumes of all gases contain the same number of molecules under the same conditions of temperature and pressure. From this law it follows that molecular volume of one gas is exactly equal to the molecular volume of any other gas.

AW (abbr). 1. 'Automatic weapons.' 2. 'Air warning.' 3. 'Above water.'

axes of an aircraft. Three fixed lines of reference, usually centroidal and mutually perpendicular. The horizontal axis in the plane of symmetry, usually parallel to the axis of the propeller shaft or the thrust line of the jet (motor) engine, is called the longitudinal axis; the axis perpendicular to this, in the plane of symmetry, is called the normal or yaw axis; and the third axis perpendicular to the other two is called the lateral or pitch axis. In mathematical discussion, the first of these axes, drawn from rear to front, is generally designated the 'X' axis; the second, drawn downward, the 'Z' axis; and the third, running from left to right, the 'Y' axis.

axial flow. *Specif.* In a jet aircraft, the flow of air along the longitudinal axis of the engine.

axial-flow compressor. A centrifugal compressor used esp. in a jet engine that forces the air or other fluid in a straight line parallel to the axis of its rotating impeller.

axial-flow jet engine. A jet engine in which the flow of air is along the longitudinal axis of the engine; *specif.* a turbojet engine that utilizes the axial-flow compressor.

axial moment of inertia. One of the factors determining the stability of a spinning projectile.

axial observation. Observation of gun fire from a point on or near the line joining the gun and target; the angle at the target between the gun and observer is less than 5°. See: **flank observation.**

axis, elastic. *Stress analysis.* The locus of all points through which a force may be applied to a structure without causing torsional deflection.

axis of an aircraft. See: **axes of an aircraft.**

axis of precession. In a gyroscope or gyroscopic body, any axis perpendicular to the spinning axis, about which precession may take place.

The axis of precession follows a line between the point at which force is applied and the spinning axis. See: **precession.**

axis of scan. See: **scan, axis of.**

axis of sighting. Line taken through the sights of a gun, or through the optical center and centers of curvature of lenses in any telescopic instrument.

axis of the bore. Imaginary central line of the bore of a gun.

axis of trunnions. Axis about which a gun is rotated in elevation to increase or decrease the range of fire.

axis, wing. The locus of the aerodynamic centers of all the wing sections of an airplane.

axle. *Artillery.* That part of a carriage that supports the weight of the weapon and has on its ends, directly or indirectly, spindles upon which the wheels are mounted. In towed two-wheeled artillery, in addition to supporting the weapon in travel, the axle also provides the support for firing the weapon. It may carry connections for the trails, brakes, firing segments, etc. The three main types of axles are—axle for axle traverse; axle for pintle traverse (bottom carriage); axle for bogies and transport wagons.

AXLE ASSEMBLY, AUTOMOTIVE, DRIVING. A device suspended between and connecting opposite wheels, which consists of the housing and driving differential mechanism, and supports the weight of a vehicle.*

axle traverse. Traverse in which the carriage of an artillery weapon slides laterally along the axle, pivoting about the trail spade; applicable only to carriages with box trails; traverse is limited to a few degrees so that the trail must be moved in changing targets, or in following a rapidly moving target.

AXLE, VEHICULAR, NONDRIVING. An item designed for connecting the opposite wheels and supporting the weight of a vehicle without provisions for driving the wheels. It may have pivoting wheel spindles for steering.*

az (*abbr.*). 'Azimuth.'

azimuth. (*az*) A direction expressed as a horizontal angle usually in degrees or mils and measured clockwise from north. Thus azimuth will be either true

azimuth, grid azimuth, or magnetic azimuth depending upon which north is used.

azimuth adjustment slide rule. Circular slide rule by which a known angular correction for fire at one elevation can be changed to the proper correction for any other elevation. An azimuth adjustment slide rule is used to find corrections for high-angle guns, such as the mortar or howitzer.

azimuth angle. 1. The angle used to express azimuth. 2. In celestial navigation, the interior angle of the astronomical triangle at the zenith, measured from the observer's meridian to the vertical circle through the body.

A certain star or aircraft may be said to have an azimuth angle of 35°, meaning that the star or aircraft on a horizontal plane is bearing 35° clockwise from true north as seen by the observer.

azimuth ballistic correction. A ballistic correction made in azimuth.

AZIMUTH BAR. A navigational instrument for use with a compass to determine bearing of objects or azimuth of celestial bodies. Consists of a frame on which is mounted sighting vanes, reflecting mirrors and/or prisms. Excludes **BEARING BAR.** See also: **AZIMUTH CIRCLE** and **BEARING CIRCLE.***

AZIMUTH CIRCLE. A navigational instrument used for the determination of the azimuths of celestial objects and the bearings of terrestrial objects by means of sighting vanes, prisms, and mirrors mounted on a ring formed to fit and rotate about the bezel of a marine compass, permitting simultaneous viewing of a target and the compass card reading. Excludes **BEARING CIRCLE.** See also: **AZIMUTH BAR** and **BEARING BAR.***

azimuth deviation. Angular difference in azimuth between the lines from the gun to the target and from the gun to the point where a projectile strikes or bursts.

azimuth difference. Apparent difference in the position of an object viewed from two different points, especially from a gun position and a directing point. Also called **parallax.**

azimuth indicator. See: **INDICATOR, AZIMUTH.**

azimuth instrument. Telescopic instrument used for measuring horizontal angles, usually azimuths.

azimuth micrometer. Instrument for measuring azimuths with which very exact readings are made.

azimuth rate. *Gunnery.* The rate of change in azimuth measured in mils or degrees per second.

azimuth scale. Graduated angle-measuring device on instruments, gun carriages, etc., that indicates azimuth.

azimuth-stabilized PPI. A plan position indicator which is stabilized by a connection with the gyro compass so that the presentation is oriented towards true or magnetic north at the top of the scope. Also called a 'north-stabilized PPI.'

azon. (*azimuth only*) A glide bomb used in World War II, having movable control surfaces in the tail adjusted by radio signals to control the bomb in azimuth only. Hence, azon bomb, azon missile. See: **bomb, glide; razon.**

B

- B** (*abbr*). 1. 'Belted' when applied to ammunition. 2. In such usage as M56B1, designates a modification of standardized item, using an alternate material or method of manufacture.
- babble**. The resultant interference, or cross-talk, from a large number of interfering channels.
- back azimuth**. A reciprocal azimuth determined by adding or subtracting 180° to or from the degrees expressing the azimuth of an object.
- back-azimuth method**. Method of locating an observer's position on a map or chart with a very accurate angle-measuring instrument. It is done by measuring the azimuth of three visible points that are located on the map or chart, and drawing through each point a line or ray with its calculated back azimuth. The point where the lines or rays intersect is the location of the observer's position. The back-azimuth method is one kind of resection.
- backblast**. Rearward blast of gases to the rear of recoilless weapons, rocket launchers and rocket assisted takeoff units.
- backblast area**. Cone shaped area in rear of a recoilless weapon, rocket launcher or rocket assisted takeoff unit which is dangerous to personnel.
- backfire**. *Specif*. 1. A rearward escapement of gases or cartridge fragments upon firing a firearm or gun. See: **flareback**. 2. A premature explosion in the cylinder of an internal combustion engine during the exhaust stroke, tending to drive the crankshaft in a direction counter to its normal one; any explosion in the intake or exhaust passages of such an engine.
- background**. *Radar*. An object or objects, esp. on the earth's surface, that produce signals on a radar screen but are of no particular interest; background returns. See also: **radar clutter**.
- background noise**. 1. *Electroacoustics*. In recording and reproducing, the total system noise independent of whether or not a signal is present. The signal is not to be included as part of the noise. 2. *Receivers*. The noise on the carrier in the absence of signal modulation.
- background research**. An aspect of basic research considered to provide a foundation for subsequent research.
Background research is usually considered to involve systematic observation, collection, and organization of facts to provide adequate data upon which to project the analysis and experimentation required for the discovery or testing of new facts, principles, or hypotheses.
- background return**. *Electronics*. An echo from an object other than the target, appearing on a radar screen. Cf: **radar clutter**.
- backhaul**. 1. The return trip of a vehicle, when carrying cargo. 2. Excessive and unnecessary rerouting and double-handling of cargo.
- backlash**. *Specif*. The backward striking motion of a badly fitted machine part that results from changes in velocity, as between the teeth of engaging gears.
- back plate**. Plate at the rear of the breech mechanism of certain automatic guns. In small arms, it is the plate which closes the rear of the receiver group.
- back-scattering**. The scattering of energy of the radar-reflected signal.
- back-scattering coefficient B** (echoing area). *Antennas*. For large objects, the back-scattering coefficient of an object is approximately the product of its interception area by its scattering gain in the direction of the source, where the interception area is the projected geometrical area and the scattering gain is the reradiated power gain relative to an isotropic radiator.
- backsight method**. Sighting two pieces of equipment directly at each other in order to orient and synchronize one with the other in azimuth and elevation.
- backswept wing**. 1. A sweptback wing. 2. An airplane or missile wing in which the leading edge tapers backward from root to tip. Now *rare*.
- bacteriological warfare**. Warfare conducted with bacteriological weapons, as by bombs filled with bacteria. This is a species of biological warfare.
- Badger Ordnance Works**. Ordnance Corps field installation for production of ammunition during an emergency. Located near Baraboo, Wisconsin.
- baffle**. A plate or wall, as around an engine or in a fuel tank, the purpose of which is to deflect, direct, or retard the flow of a liquid or gas.
- bag, cartridge**. See: **bag, propellant**.
- bagloading**. The loading of propellant into bags to form propelling charges for semifixed or separate loading ammunition.
- bag, powder**. See: **bag, propellant**.
- bag, propellant**. Fabric container that holds the propelling charge for separate loading or semifixed ammunition. Usually made of cartridge cloth, a special fabric that is consumed without leaving a burning residue.
- baka bomb**. [Fr. Japanese 'foolish.'] A WW II Japanese rocket airplane bearing explosives, guided onto its target by its pilot, called 'jinrai Butai' (divine thunderbolt) by the Japanese.
This craft was carried by a large airplane to a point near the target and released.
- balance**. 1. The stability achieved by an aircraft or missile when the forces of drag, thrust, lift and

gravity are acting so as to produce steady flight without roll, yaw, or pitch. 2. To bring an aircraft or missile into balance.

balanced modulator. See: **modulator, balanced.**

balanced surface, aerodynamic. A control surface that extends on both sides of the axis of the hinge or pivot, or that has auxiliary devices or extensions connected with it in such a manner as to effect a small or zero resultant moment of the air forces about the hinge axis.

balanced surface, static. A control surface whose center of mass is in the hinge axis.

ball. Used in ammunition nomenclature to: 1. Indicate a bullet for general use as distinguished from bullets for special uses such as armor-piercing, incendiary, high explosive, etc. 2. Indicate a small arms propellant which is oblate spheroidal in shape, generally double base propellant.

ball ammunition. Non-armor-piercing small arms ammunition in which the projectile is solid. It is intended for use against personnel, light material targets or for training purposes.

BALL, BEARING. A spherical body, a series of which provide the rolling elements in a BEARING, BALL (as modified). It may have other uses such as the checking components in a ball check valve.*

BALL, CELLULOSE-NITRATE. An item to simulate gunfire, for training purposes.

ball gunner. Short for 'ball-turret gunner.' See: **turret, ball.**

ballistic. Pertaining to **ballistics** (which see) or the motion of missiles.

ballistic area. Space lying between the centers of impact of two groups of shots, one consisting entirely of shots over the target, the other entirely of shots short of the target.

ballistic case. Any shell or casing given efficient ballistic characteristics, used to inclose elements for delivery on a target; any bomb, projectile, or rocket case. Cf: **adapter, cluster, aimable.**

ballistic coefficient. The numerical measure of the ability of a missile to overcome air resistance. It is dependent upon the mass, the diameter, and the **form factor** (which see).

ballistic conditions. Conditions which affect the motion of a projectile in the bore and through the atmosphere, including muzzle velocity, weight of projectile, size and shape of projectile, rotation of the earth, density of the air, elasticity of the air, and the wind.

ballistic correction. Adjustment in firing data that is based on conditions affecting the flight of a projectile. It allows for such factors as wind, temperature, etc. It does not include adjustment based on observation of fire.

ballistic curve. The curve described by the actual path of a bullet, bomb, or other projectile as determined by the ballistic conditions, i.e., by the velocity due to the propulsive force, by gravity, wind, temperature, etc.

This term is not applied to the path of a rocket until its fuel is cut off. See: **trajectory.**

ballistic cycle. *Cartridge actuated devices.* Elapsed time from ignition of propellant to time that functioning of device is complete.

ballistic deflection. The **deflection** (which see) of a missile due to its ballistic characteristics.

With regard to projectiles fired from guns, ballistic deflection is considered to be either lateral or vertical. Lateral ballistic deflection is positive if to the right, negative if to the left; vertical ballistic deflection is positive if upward, negative if downward.

ballistic density. A theoretical constant density of the atmosphere that would have the same effect on a missile in flight as the varying densities actually encountered.

ballistic director. Combined observing and predicting instrument that computes firing data for the future position of a moving target. A ballistic director makes corrections for actual conditions of wind, atmospheric density, temperature, muzzle velocity, etc.

ballistic efficiency. 1. Ability of a projectile to overcome the resistance of the air. Ballistic efficiency depends chiefly on the weight, diameter, and shape of the projectile. 2. The external efficiency of a rocket or other jet engine of a missile.

ballistic equivalence. Substitution of a single perforated grain with web of 1.23 to 1.28 times the web of a seven-perforated grain for preliminary interior ballistic calculations is sometimes desirable. Since the assumed grain gives about the same calculated results as the multiperforated grain, they are said to have ballistic equivalence.

ballistic integrator. A four wheeled planimeter, which enables determination of the geometric properties of solids of revolution by following the scaled cross section outline. Volumes and moments of inertia are computed from the recorded movements of the integrator wheels.

ballistic lead. The correction or allowance for wind effects and gravity made when computing a lead angle. Cf: **kinetic lead.**

ballistic limit. The minimum velocity at which a particular armor-piercing projectile is expected to consistently completely penetrate armor plate of given thickness and physical properties at a specified angle of obliquity. Because of the expense of firing tests and the impossibility of controlling striking velocity precisely, plus the existence of a zone of mixed results in which a projectile may completely penetrate or only partially penetrate under apparently identical conditions, statistical approaches are necessary, based upon limited firings. Certain approaches lead to approximation of the V_{∞} Point, that is, the velocity at which complete penetration and incomplete penetration are equally likely to occur. Other methods attempt to approximate the V_0 Point, that is, the maximum velocity at which no complete penetration will occur. Other methods attempt to approximate the V_{100} Point, that is, the minimum velocity at which all projectiles will completely penetrate.

ballistic missile. Specifically, any missile guided especially in the upward part of its trajectory, but becoming a free falling body in the latter stages of its flight through the atmosphere. This missile contains guiding devices, such as preset mechanisms, but it is distinguished from a guided missile in that it becomes a free falling body, subject to ballistic reactions as it descends through the atmosphere. Currently the term has a strong connotation of a missile designed to travel outside, or in the outer reaches of, the atmosphere before plunging toward its target. The German V-2 is considered a ballistic missile.

ballistic mortar. A heavy, short barrelled mortar, pendulum mounted, for determining the relative power of explosives. A small sample of a test explosive is placed in the detonation chamber and a projectile is located forward of the charge. Upon detonation the projectile is driven into a sand bank and the mortar swings through an arc. A marker records the maximum height to which the mortar rises on its arc. The weight of the test explosive required to produce the same rise as 10 grams of TNT is determined, and the rating is the percentage resulting from dividing 10 by the determined weight and multiplying by 100. This figure is called the TNT value.

ballistic pendulum. First reasonably accurate ballistic measuring instrument for determining projectile velocity; described by Benjamin Robins before the Royal Society of England in 1743. A bullet was fired into a wood pendulum, and its velocity determined by equating the expressions for the momentum of the bullet before striking the pendulum and the momentum of the pendulum after receiving the bullet.

ballistics. Branch of applied mechanics which deals with the motion and behavior characteristics of missiles, that is, projectiles, bombs, rockets, guided missiles, etc., and of accompanying phenomena. It can be conveniently divided into three branches: *interior ballistics*, which deals with the motion of the projectile in the bore of the weapon; *exterior ballistics*, which deals with the motion of the projectile while in flight; and *terminal ballistics*, which is concerned with the effect and action of the projectile when it impacts or bursts.

ballistic shock test. See: **shock test.**

ballistics of penetration. That part of terminal ballistics which treats of the motion of a projectile as it forces its way into targets of solid or semisolid substances such as earth, concrete, or steel. See also: **ballistics.**

ballistic table. Compilation of ballistic data from which trajectory elements such as angle of fall, range to summit, time of flight, ordinate at any time, etc., can be obtained. See also: **firing table.**

ballistic temperature. A theoretical constant temperature that would have the same effect on a missile in flight as the varying temperatures actually encountered.

ballistic test. Proof test of weapons or ammunition to determine suitability.

ballistic trajectory. That part of the trajectory of a bomb, shell, rocket, or other missile which is traced after the cutoff of propulsive force.

The ballistic trajectory of a projectile is its entire trajectory, beginning at the muzzle of the gun; that of a bomb is from the point at which it separates from the bomber; that of a ballistic missile from the point at which its fuel is exhausted or cut off. See: **trajectory.**

ballistic tube. Gun tube kept or used for ballistic tests. Usually selected because of certain demonstrated characteristics.

ballistic uniformity. The capability of a propellant, when fired under identical conditions from round to round, to impart uniform muzzle velocity, and to produce similar interior ballistic results.

ballistic wave. An audible disturbance caused by the compression of air ahead of a missile in flight.

ballistic weapon. Any missile weapon, as a bomb, rocket, projectile, or bullet, affected by ballistic conditions.

ballistic wind. (ballwin) A theoretical or assumed constant wind that would have the same effect on a missile, or on a bomb, from the point of its departure to its target as the varying winds actually encountered.

ballistite. Often capitalized. A smokeless propellant containing nitrocellulose and nitroglycerin, used in some rocket, mortar, and small arms ammunition.

ball mount. See: **MOUNT, GUN.**

ball of fire. A fireball, which see.

balloon. (bln) A contrivance that incorporates a non-porous bag filled with heated air or gas lighter than air so that it rises and floats in the atmosphere, esp. a nonrigid airship without a propelling system.

balloon apron. An anti-aircraft device consisting of cables hanging perpendicularly from other cables extending between two or more balloons.

The term 'balloon apron' is sometimes used in the sense of **balloon barrage** (which see).

balloon barrage. An anti-aircraft defense normally consisting of a number of balloons, usually together and equipped with balloon aprons, held captive by steel cables and strategically moored near vital areas or installations.

The cables or aprons force attacking planes to fly at higher altitudes, thus impeding attack. Sometimes called 'balloon curtain' or 'balloon apron.' See also: **barrage.**

BALLOON, BARRAGE. A balloon restrained from free flight by means of a cable attaching it to the earth. It is used to support wires or nets as protection against air attacks.*

balloon curtain. A balloon barrage.

balloon fabric. A fabric, usually rubberized, for balloon or airship envelopes.

Balloon fabric is also sometimes used as a finish covering over the wood covering of certain airplanes.

balloon gun. An early anti-aircraft gun for use against balloons.

ballooning. The activity connected with piloting, riding in, or sending balloons aloft.

BALLOON, METEOROLOGICAL. A balloon designed to have a predetermined rate of free ascent when inflated with a specific volume of a lighter-than-air gas.*

BALLOON, TARGET. A free floating balloon used for gunnery practice.*

balloting. A tossing or bounding movement of a projectile within the limits of the bore diameter, while moving through the bore under the influence of the propellant gases. The projectile normally contacts the bore at the rotating band and the bourrelet. Balloting results in change in the element of the bourrelet surface which contacts the bore.

ballwin (abbr). 'Ballistic wind(s).'

band. Term sometimes used for rotating band. See: **band, rotating.**

band (abbr). 'Bandoleer.'

band, copper. Term sometimes used for rotating band. See: **band, rotating.**

BAND, DUMMY PROJECTILE. A replaceable band of bronze or other nonferrous metal provided at the front (bourrelet) and rear of a dummy separate loading projectile. The bands provide bearing surfaces contacting the cannon chamber, preventing wear and damage to the chamber. The bands are replaced when they become worn or damaged. Dummy projectiles are used in training personnel in the operations of loading and firing artillery.

band, frequency. In communications and electronics, a continuous range of frequencies extending between two limiting frequencies.

band gap. Clearance between rotating band and band seat after seating of the band on the projectile. See: **band, rotating; band seat.**

band groove. One of the channels cut into the rotating band of a projectile during the process of engraving. It is produced by the corresponding land in the rifling of the gun tube. See: **band land; rifling.**

band land. The raised portion on the rotating band of a projectile after engraving has taken place. It is produced by the rifling groove of the gun tube. See: **band groove; engraving.**

band, lug. Any of the bands on an aircraft rocket, which, with the appropriate fittings, attach the rocket to a rail-type or post-type aircraft rocket launcher. See also: **BAND, SUSPENSION, ROCKET.**

band of fire. Grazing fire usually from one or more automatic guns, that gives a cone of dispersion so dense that a man trying to cross the line of fire would probably be hit. A final protective line uses a band of fire.

BANDOLEER. A closed loop of fabric, provided with pockets designed to accommodate small arms ammunition. Used by individual soldier for carrying ammunition, by suspending one or more bandoleers over the shoulders.

BAND, RETAINING, ROCKET MOTOR CLUSTER. A single or multisection item with fastening devices,

specifically designed to surround and hold in position two or more rocket motors to form a rocket motor cluster. It may include provisions for mounting fins.*

band, rotating. Soft metal band around projectile near its base. The rotating band centers the projectile and makes it fit tightly in the bore, thus preventing the escape of gas, and by engaging the rifling, gives projectile its spin.

band, rotating, preengraved. A rotating band fitted to a projectile and containing grooves to fit the rifling of the weapon. The grooves are formed as part of the manufacture of the projectile. This practice is followed in the manufacture of ammunition for recoilless weapons. See also: **band, rotating.**

band, rotating, welded overlay. A rotating band formed on a projectile by depositing molten metal by welding techniques followed by machining to the required contour. This avoids weakening the projectile wall as would occur in machining the band seat deep enough to maintain a swaged band, and also reduces the possibility of band loss. See also: **band, rotating.**

band seat. Machined groove around circumference of a projectile, into which the rotating band is seated.

BAND SET, 280 MILLIMETER DUMMY PROJECTILE. The required segmental parts of dummy projectile bands required to replace the front and rear bands of the PROJECTILE, 280 MILLIMETER DUMMY.

BAND, SUSPENSION, PARACHUTE FLARE. An adjustable ring, usually of steel, of size suitable for applying to a specified type of parachute flare. Provided with lugs for attachment to a standard bomb rack, to enable carrying and release in the same manner as a bomb.

BAND, SUSPENSION, ROCKET. A metallic item designed for mounting on a rocket to provide suspension from a rocket launcher.*

bandwidth. The width of a band of frequencies; *specif.*, the width of a resonance curve, in cycles per second, taken at a specified point along the curve.

The bandwidth is usually measured between the frequencies at which the power obtained in a circuit is one-half of the maximum.

bandwidth, attained. That portion of the band covered by the total frequency deviation of a subcarrier oscillator or pick-up with full range applied stimulus.

bandwidth, design. The frequency any device is intended to achieve with full range stimulus.

Bangalore torpedo. Metal tube or pipe that is packed with a high explosive charge. A Bangalore torpedo is chiefly used to clear a path through barbed wire or mine fields. See: **DEMOLITION KIT, BANGALORE TORPEDO.**

bang-bang control. Control system used in guidance, wherein the corrective control applied to the missile is always applied to the full extent of servo motion.

bank. 1. The attitude of an aircraft when its lateral axis is inclined with respect to the horizon; the position normally assumed by an aircraft when making a turn, to prevent skidding. 2. A turn made by an

airplane when in this attitude. 3. To incline an aircraft laterally, usually when making a turn, to prevent skidding; hence, to turn an aircraft.

bank indicator. A flight instrument which shows, with respect to the horizon, an aircraft's angle of roll about its longitudinal axis.

BAR (*abbr.*). 'Browning automatic rifle.'

baratol. An explosive composed of barium nitrate and TNT. Less brisant than TNT, used as burster charge for colored marker projectiles.

barbette. Mound of earth, platform, support, or carriage upon which guns are mounted to fire over a wall or parapet, not through a port or opening.

bare fuze. See: fuze, bare.

barium titanate gage. See: gage, piezoelectric.

barometer. *Meteorological.* An item which senses, measures, and indicates atmospheric pressure. (For modifier use physical design characteristic, such as aneroid.)*

BAROMETER, ANEROID. A barometer consisting of a pressure-sensitive element which contracts or expands in proportion to atmospheric pressure, connected through a linkage to a pointer. Its dial is graduated in units of pressure measurement (pounds per square inch, inches or mercury, millibars, etc.) to indicate atmospheric pressure only.*

BAROMETER, MERCURIAL. A barometer consisting of a column of mercury which rises and falls within a tube due to variations of atmospheric pressure.*

barometric altimeter. An altimeter that uses a barometer for measuring height.

barometric fuel control. A device that maintains the correct flow of fuel to an engine by adjusting to atmospheric pressure at different altitudes, as well as to impact pressure.

barometric fuze. See: fuze, barometric.

barometric switch. A switch activated by an aneroid reacting to barometric pressure.

barometric tendency. The tendency of barometric change as indicated by readings within the preceding few hours, usually three, recorded in tenths of millibars.

barrage. 1. Prearranged barrier of fire designed to protect friendly troops and installations by impeding enemy movement across defensive lines or areas; barrage fire. 2. Method of fire employed against a fast-opening or closing target, whereby a gun range or fuze setting is used which will place the initial shots ahead of the target in the direction of the target's anticipated advance. 3. Protective screen of balloons that are moored to the ground and kept at given heights to prevent or hinder operations by enemy aircraft at low levels. The steel cable or wire from which each balloon flies and the lethal devices attached to such flying cable or wire constitute hazards to any aircraft flying beneath the balloon. In this meaning also called balloon barrage. See

also: antiaircraft barrage; balloon barrage; rolling barrage.

barrage fire. See: barrage.

barrel. (*bb1*) A cylindrical metallic item which is that part of a gun which controls the initial direction of the projectile. The bore may be rifled and must have a diameter of less than 37 millimeters.* The term tube (which see) is preferred for designating the larger diameters.

barrel assembly. Gun barrel together with the other parts necessary to attach it to the rest of the gun.

BARREL, CARBINE. See: barrel; carbine. Cf: tube.

barrel erosion. Wearing away of the interface of the bore due to the combined effects of gas washing, scoring and mechanical abrasion. Barrel erosion causes a reduction in muzzle velocity.

barrel extension. Metal projection fixed to the rear of the barrel in certain automatic guns. The barrel extension extends backward and holds the breech locked against the gas pressure in the chamber when the gun is fired.

BARREL, GUN. See: barrel; gun, senses 1 and 2. See also: TUBE, CANNON.*

barrel, howitzer. See: TUBE, CANNON.*

barreling. Expansion of the body of a cartridge case when the gun chamber recovers longitudinally following firing, and the mouth of the case is not free to move in the chamber. A cause of difficult case extraction. *Slang.*

barrel life. As applied to small arms and automatic weapons, the number of rounds which may be fired through a barrel at a particular firing schedule before the barrel becomes unserviceable. Barrel life will vary with the firing schedule. Cf: accuracy life.

barrel, mortar. See: TUBE, CANNON.*

BARREL, PISTOL. See: barrel; pistol.

barrel pressure. See: pressures, gun.

barrel reflector. Device used for inspecting the bore and chamber of a gun or rifle barrel. A barrel reflector consists of a mirror mounted in a frame and a tube that is inserted in the chamber and gives a view of the rifle bore.

BARREL, REVOLVER. See: barrel; revolver.

BARREL, RIFLE. See: barrel; rifle, sense 1.

BARREL, SHOTGUN. See: barrel; shotgun.

barrel whip. The movement of a gun barrel in a plane normal to the longitudinal axis of the gun bore, as the gun operates through a complete firing cycle.

barricade. Structure composed essentially of concrete, earth, metal, or wood, or any combination thereof, and so constructed as to reduce or confine the blast effect and fragmentation of an explosion.

barrier material. 1. An inert material placed in an explosive charge to shape the detonation wave. See also: lens; wave shaper. 2. Packing material impervious to moisture-vapor or other liquids and gases.

BARRIER MATERIAL, GREASEPROOFED, FLEXIBLE. A greaseproofed, acid-free noncorrosive material, either single ply or laminated to a backing

sheet, intended for wrapping metal parts and equipment which will usually be coated with a corrosion-preventive compound. This material prevents the grease from penetrating the rest of the package or damaging other material stored near.*

BARRIER MATERIAL, GREASEPROOFED-WATERPROOFED, FLEXIBLE. A greaseproofed, waterproofed, acid-free, noncorrosive material constructed of one or more components or plies. It is suitable for fabrication into bags, sleeves, and pouches for packaging.*

BARRIER MATERIAL, WATERPROOFED, FLEXIBLE. A material used to package items in order to protect them against water. Excludes BARRIER MATERIAL, WATER VAPORPROOFED, FLEXIBLE.*

BARRIER MATERIAL, WATER VAPORPROOFED, FLEXIBLE. A material used to package items in order to prevent water vapor damage. Excludes BARRIER MATERIAL, WATERPROOFED, FLEXIBLE.*

bar-sight. Rear sight of a firearm, consisting of a movable bar, usually with an open notch.

BAR, SINE. A device consisting of a precision ground straight edge at the extremities of which buttons are attached, so that their centers are equidistant from the straight edge, or working edge of the tool. It is used for convenience in laying out or machining to locate work at given angles on angle plates.*

base. 1. Foundation or part upon which an object or instrument rests, such as a gun base. 2. Station or installation from which a military force operates and from which supplies are obtained. 3. Part of a projectile below the rotating band. 4. Line used in mapping, surveying, or fire control as a reference from which distance and angles are measured; *base line*. 5. *Electronic computers.* A number base; a quantity used implicitly to define some system of representing numbers by positional notation; radix.

base angle. The angle between the line joining a gun and its first or principal target and the line joining the gun and a visible reference point, from which angles to targets that cannot be seen at the gun are measured. The gun is first pointed at the reference point (initial aiming point) and its dials are set at zero. The gun is then pointed at its primary target; the angle through which the gun has been turned is the base angle.

base cover. A metal plate, caulked, crimped or welded to the base of a projectile to prevent leakage of propellant gases into the charge. Not ordinarily used on small projectiles. Also called 'base plate.'

base detonating fuze. See: FUZE, BASE DETONATING.

base drag. See: drag, base.

BASE, DUMMY CARTRIDGE. The portion of a dummy cartridge which simulates the base and flange of a service type cartridge case. It is usually designed for easy replacement when required, because of damage sustained by repeated insertions in the cannon chamber.

base ejection. (BE) A descriptive term applied to projectiles in which provision is made for ejecting the contents through the base by internal force adequate to remove the base plug and contents simultaneously. Usually the force is applied by an expelling charge, which is functioned by a fuze. Various types of special purpose projectiles such as illuminating, leaflet and some smoke projectiles, are of the base ejection type.

base fuze. See: fuze, base.

base ignition. (BI) A descriptive term applied to a signal or other munition which ignites from the base with subsequent emission of smoke or chemical.

base length. In range finders, the actual optical length of the instrument. It is approximately equal to the distance between the centers of the end windows. It is the base of the range triangle by means of which the range is computed.

base line. 1. Line of known length and direction between two points whose locations are known. A base line is used in fire control, mapping, and surveying. 2. Horizontal, vertical or circular trace formed by the movement of the sweep on the screen of the cathode-ray tube of a radar set. In this meaning, it is also called time base.

base loading plug. See: plug, base.

base mortar. Mortar in a platoon for which initial firing data are computed and with reference to which data for other mortars in the unit are computed.

base of projectile. The rearmost section of a projectile. For projectiles having a rotating band it is the section located to the rear thereof.

base of trajectory. Straight horizontal line from the center of the muzzle of a weapon to the point in the downward curve of the path of the projectile that is level with the muzzle.

base piece. The gun selected after calibration fire, the center of burst or impact of which is taken as the reference point in determining calibration corrections for the remaining guns of the battery. No calibration corrections are applied to the base piece.

base plate. 1. Plate or support used to distribute the weight of a heavy structure or apparatus so as to prevent sinking or collapse under direct thrust. 2. Metal plate with a socket into which the base of the barrel of a mortar is seated. The base plate is set in a firm position on the ground and takes up and distributes the shock of the recoil of the mortar. 3. A metal plate forming a base cover on projectiles. See: base cover.

base plug. See: plug, base.

base point. A well-defined point in the target area used as a point of reference from which range and direction adjustments of artillery fire are made. The location of the base point relative to the weapons is accurately known.

base point line. The line connecting the battery center and the base point.

base ring. 1. A metal ring which is bolted to the concrete of the emplacement and which supports the

weight of a gun or mortar carriage. 2. A ring on the breech of a cannon dividing the base from the first reinforcing ring.

base shop. See: depot maintenance shop.

base spray. Fragments of a bursting shell that are thrown to the rear in the line of flight, in contrast with **nose spray**, which are fragments of a bursting shell that are thrown to the front, and **side spray**, which are fragments of a bursting shell that are thrown to the side.

base stake. Black and white marker set out by a gunner to mark the line from gun to base point or from gun to initial aiming point. The base stake marks the direction of the primary target; aiming stakes, each painted preferably with a single color, mark the direction of the other targets.

basic data. *Gunnery.* Essential facts needed to place fire on a target. The location of the target relative to the battery in terms of direction, or deflection; distance, or range; and difference in altitude, or site.

basic frequency. *Electroacoustics.* Of an oscillatory quantity having sinusoidal components with different frequencies, the frequency of the component considered to be the most important.

In a driven system, the basic frequency would, in general, be the driving frequency, and in a periodic oscillatory system, it would be the fundamental frequency.

basic hole system. System of dimensioning in which the minimum limit of each hole size is basic. The fit desired is obtained by varying the allowance of the shaft and the tolerance of the mating parts. Cf: **basic shaft system.**

basic load. That quantity of ammunition which is carried by individuals and on the vehicles of a unit. Like the available supply rate, it is expressed in terms of rounds for ammunition items fired by weapons and in other units of measure for bulk allotment items. It includes the ammunition carried by the individual soldier, the ammunition stowed in self-propelled weapons, the ammunition carried in prime movers and in unit trains.

basic load of ammunition. See: **basic load.**

basic name. In ordnance terminology, a single word or minimum number of words which establishes the basic concept of an item. Example: *TRUCK*. Cf: **item name.** See also: **nomenclature.**

basic research. Research carried out by the use of those techniques and disciplines relevant or appropriate to the discovery, testing, or illustrating of a fact, relationship, or principle; research concerned with adding to man's knowledge.

Basic research deals with primary evidence or raw materials, and because of this the use of primary evidence may be taken as a sign of basic research. Such research is applicable to anything—phenomena, the facts upon which a science is developed, the principles or laws of science, the biography of a man, the facts related to an historical event, the logic of mathematics or reasoning, the criteria of the disciplines, or the manifestations of philosophy, religion, or

aesthetics. It may be conducted in a laboratory by experimentation, or in a library by relating hitherto unrelated facts. This research is often done in phases or by different people, each working on a part of the total effort, in which case any part of the activity is considered basic research. This activity includes **background research** (which see), which is not so much a phase of basic research as it is an aspect, for basic research involves continuous re-appraisal of fact and hypothesis. See: **applied research; research.**

basic shaft system. System of dimensioning in which the maximum limit of each shaft size is basic. The fit desired is obtained by varying the allowance of the hole and the tolerances of the mating parts. Cf: **basic hole system.**

basic size. In dimensioning and tolerancing, the theoretical size from which the limits are derived by the application of the allowance and the tolerances. There is only one basic size for any pair of mating surfaces. A dimension which has been labeled basic on a drawing (indicated by the word 'BASIC' after the dimension) does not have a specifically stated individual tolerance but varies within limits established by the tolerances on other dimensions.

basin, fording. Test facility at proving ground to check fording ability of vehicles.

basket. Structure within a tank turret that carries the men who operate the turret. The basket in a tank turret rotates as the turret rotates.

BASKET, DELIVERY, ROCKET EQUIPMENT. A specifically designed collapsible item of metal framework, with perforated sheet metal sides and bottom. It may be equipped with cradles, straps, skids and slings for transporting rocket equipment by helicopter.*

BAT (*abbr.*). 'Battalion antitank.' (Usually pronounced as a word.)

batch. A quantity of material which has been subjected to some unit chemical process or physical mixing process which is intended to make the final product substantially uniform. For example, the quantity of explosive melted in a melt kettle at one time.

BAT rifle. Term commonly applied to the 106-mm battalion antitank (BAT) rifle. Also called **BAT weapon.**

BAT spotting cartridge. Term commonly applied to spotter-tracer cartridge for use in the caliber .50 spotting rifle, on the 106-mm battalion antitank (BAT) rifle mount.

BAT spotting rifle. Term commonly applied to caliber .50 spotting rifle, mounted on the 106-mm battalion antitank (BAT) rifle mount.

battery. (*btry*) 1. Tactical and administrative artillery unit corresponding to a company or similar unit in other branches of the Army. 2. Group of guns or other weapons, such as mortars, machine guns, artillery pieces, or searchlights, set up under one tactical commander in a certain area. 3. A tube (barrel) *in battery* is a gun tube fully returned from

recoil upon its cradle. A tube *out of battery* is a tube not fully returned from recoil. 4. An apparatus containing several electric cells, esp. containing a liquid electrolyte.

battery center. A point materialized on the ground at the approximate geometric center of the battery position; the chart location of the battery.

battery chart. A chart showing the firing data for each gun in a battery. It registers target locations, elevation and direction data, firing orders, etc.

battery commander's telescope. See: telescope, battery commander's.

BATTERY COMPARTMENT, TORPEDO. A hollow cylindrical item designed to house the propulsion battery of a torpedo.*

battery front. Lateral distance between the flank guns of a battery.

battlefield recovery. Removal of disabled or abandoned materiel, either enemy or friendly, from the battlefield and its movement to a recovery collecting point or to a maintenance or supply establishment.

battle sight. A predetermined sight setting that, carried on a weapon, will enable the firer to engage targets effectively at battle ranges when conditions do not permit exact sight settings.

BAT weapon. Battalion antitank weapon. An organic defense weapon issued at the battalion level, provided with antitank and antipersonnel ammunition.

BAYONET. An edged steel item of various lengths, with a handle, designed to be attached to the muzzle end of a rifle, shotgun or the like. Includes single and double edged items.*

bazooka. Popular name applied to the 2.36-inch rocket launcher. The later model 3.25-inch rocket launcher was termed the *super bazooka*.

BBC (abbr). 'Bromobenzylcyanide' (tear gas).

bbl (abbr). 'Barrel.'

BC telescope. See: telescope, battery commander's.

BD (abbr). 1. 'Base detonating.' 2. 'Bomb disposal.'

BDA (abbr). 'Bomb damage assessment.'

B damage. See: damage categories.

BDF (abbr). 'Base detonating fuze.'

BE (abbr). 'Base ejection.'

beach obstacle. Artificial obstacle placed on possible landing beaches between the high water line and the vegetation, intended for use against personnel or vehicles. See: underwater obstacle.

beacon presentation. The radarscope presentation resulting from radio-frequency waves sent out by a radar beacon.

beacon, radar. Generally, a nondirectional radiating device, containing an automatic radar receiver and transmitter, that receives pulses ('interrogation') from a radar, and returns a similar pulse or set of pulses ('response'). The beacon response may be on the same frequency as the radar, or may be on a different frequency.

bead. In flexible gunnery, the center of an optical ring sight.

beam. 1. A stream of radio or radar impulses; the steady hum in an equisignal zone; a light beam. 2. The breadth at its maximum width of an airplane fuselage, hull, or vessel.

In sense 1, *on the beam*, following a radio beam; hence, acting or performing satisfactorily and efficiently.

beam attack. An attack directed against the side of an aircraft, tank, or ship.

beam direction. In stress analysis, the direction parallel to the plane of the spar web and the plane of symmetry of an airplane. See: chord force or component; drag force or component; lift force or component.

BEAM, HOISTING, GUIDED MISSILE. A lifting device specifically designed for handling complete guided missiles and/or guided missile sections, jato units, and warheads. Designed to be used in conjunction with a guided missile hoisting unit, crane, winch or other hoisting device. May include attachments such as eye bolts, chain links, safety hooks or the like.*

BEAM, HOISTING, ROCKET. An item of I-beam configuration with brackets for attaching to rocket and an eye for lifting by crane or hoist.*

beam jitter. The small, oscillatory, angular movement induced into the radar antenna array, and consequently into the radar beam. This movement is caused by: (a) the necessity of having to develop an error signal, when in automatic tracking, before the antenna will change its position; (b) the circuitry intentionally made 'tight' to obtain plus and minus tracking errors rather than only lagging errors, and (c) gear play in the radar tracking head.

beam rider. A missile for which the guidance system consists of standard reference signals transmitted in a radar beam which enable the missile to sense its location relative to the beam, correct its course, and thereby stay on the beam.

beam-rider guidance. A system for guiding missiles in which the guided missile rides along a beam, usually a radar beam, to its target.

The beam along which the missile travels may be either fixed or movable; in the latter case control is exercised over the missile in flight by moving the beam.

beam-riding missile. See: beam rider.

BEAM SPLITTER, OPTICAL. An item consisting of light reflecting and transmitting elements, the combined function of which is to superimpose on another item such as a plotting board, a combined presentation of two or more information sources, such as a radar scope presentation and plotting marker.*

beam width. The angular width of the central effective part of a radar beam, measured in azimuth between points of half-power intensity.

bearing. 1. The angle measured clockwise from a meridian true, magnetic or compass, to the line adjoining two points. The kind of meridian from which the angle is measured determines whether the bearing

is true, magnetic, or compass. 2. That on which something rests, or in which a shaft or axle turns.

BEARING, BALL AND ROLLER, RADIAL AND THRUST. A bearing consisting of a ball or roller radial unit and a ball or roller thrust unit. The inner ring of the radial unit is integrally one ring of the thrust unit. See also: **BEARING, BALL, ANNULAR.***

BEARING, BALL, ANNULAR. A cylindrical device in which the inner or outer ring turns upon a single or double row of hardened balls which roll easily in a race, thus minimizing friction.*

BEARING, BALL, BELL CRANK. A special double row ball bearing, retainer type, with integral flange.*

BEARING, BALL, GUIDE ROLLER. A special bearing, intended primarily for low-speed oscillating service due to its full (retainerless) type construction, either concave or crowned outside diameter.*

BEARING, BALL, PIVOT. A bearing specifically designed internally to carry the combination radial and axial thrust produced at the end of a tapered or cylindrical flanged shaft in motion. See also: **BEARING, BALL, THRUST.***

BEARING, BALL, THRUST. An antifriction bearing having a ball rolling element, designed to resist axial thrust, or to support an axial load. Excludes **BEARING, BALL, PIVOT.***

BEARING BAR. A navigational instrument for use with a compass to determine bearing of objects. Consists of a frame on which is mounted sighting vanes and reflecting mirrors. See also: **AZIMUTH BAR; BEARING CIRCLE** and **AZIMUTH CIRCLE.***

BEARING CIRCLE. A navigational instrument used for the determination of the bearings of terrestrial objects by means of sighting vanes, prism, and mirror mounted on a ring formed to fit and rotate about the bezel of a marine compass, permitting simultaneous viewing of a target and the compass card reading. See also: **AZIMUTH BAR; BEARING BAR; AZIMUTH CIRCLE.**

BEARING HALF, SLEEVE. A half of a two piece split type **BEARING, SLEEVE.***

BEARING, PLAIN, ROD END. A detachable assembly in or on which a journal, gudgeon, pivot, or the like moves. It is used to carry a load and to reduce sliding friction. It does not employ rolling elements. The outer member of the assembly is modified to provide a shank. The inner member may be either a plain spherical bearing or a sleeve bearing. Excludes **BEARING, PLAIN, SPHERICAL** and **BEARING, PLAIN, SELF-ALIGNING.***

BEARING, PLAIN, SELF-ALIGNING. A detachable assembly in or on which a journal, gudgeon, pivot, or the like moves. It is used to carry a load and to reduce sliding friction. It does not employ rolling elements. The item consists of a bored precision ground ball (or spherical plain bearing) around which an outer ring is fitted. The assembly may be either separable or nonseparable. Excludes **BEARING, PLAIN, ROD END** and **BEARING, PLAIN, SPHERICAL.***

BEARING, PLAIN, SPHERICAL. A detachable part in or on which a journal, gudgeon, pivot, or the like moves. It is used to carry a load and to reduce sliding friction. It does not employ rolling elements. It may be divided into two or more segments of 180 degrees or less. The item has a cylindrical bore and is basically spherical in its exterior design to allow for shaft misalignment. Excludes **BEARING, PLAIN, SELF-ALIGNING.***

BEARING, ROLLER, CYLINDRICAL. A cylindrical device in which the inner or outer ring turns upon a single or double row of hardened rollers which roll easily in a race, thus minimizing friction.*

BEARING, ROLLER, JOURNAL. A bearing in which the journal or revolving part turns upon hardened rollers usually contained in a cage. The inner or outer race may be an integral part of the structure.*

BEARING, ROLLER, NEEDLE. A bearing in which the journal or revolving part turns upon straight hardened rollers of small diameter, the roller diameter not exceeding $\frac{1}{8}$ of roller length.*

BEARING, ROLLER, RADIAL AND THRUST. A bearing consisting of a roller radial unit and a roller thrust unit. The inner ring of the radial unit is integrally one ring of the thrust unit. Excludes items in which the same row of rollers accommodates both radial and end thrust.*

BEARING, ROLLER, ROD END. A special single or multiple roller bearing, self-aligning and constructed with either inside threaded, plain hollow, or male threaded shank.*

BEARING, ROLLER, TAPERED. A cylindrical device in which the inner cone or outer cup turns upon a single or double row of tapered hardened rollers which roll easily in a race, thus minimizing friction and designed to carry a radial load and capable of sustaining axial thrust.*

bearing, self-aligning, plain. See: **BEARING, PLAIN, SELF-ALIGNING.***

BEARING, SLEEVE. A tubular shaped item with or without flange(s) designed to reduce friction and carry a kinetic load on the surface(s) parallel to the axis of the bore. The length must exceed 25 percent of the outside diameter or the shortest diameter between peripheral flats, except for straight tubular (without flange or shoulder) items having a bearing surface(s) parallel to the axis of the bore only. Includes items which are divided into two or more segments which include 180 degrees or less of the bearing periphery.*

BEARING, V. A cylindrical device, primarily designed to furnish a bearing surface for a low-speed oscillating shaft. The item consists of a precision machined or inclosed V or modified V groove and may include a drilled hole for spring loading.*

beaten zone. Area on the ground that is hit by the shots fired from a gun battery. Because of gun vibration, differences in separate shells, changes in wind, etc., the shots fired in a series from a gun

- follow slightly different paths and strike at different points, covering a considerable area.
- beat note.** *Receivers.* The wave of difference frequency created when two sinusoidal waves of different frequencies are supplied to a nonlinear device.
- beats.** Periodic variations in amplitude, which may be described as a superposition of disturbances having different frequencies.
- Beaufort's scale.** A scale from 0 through 12 for showing the strength of wind, devised by Sir Francis Beaufort (1774-1857).
This scale uses 0 for 0 mph, 1 for 1-3 mph, 2 for 4-7 mph, 3 for 8-12 mph, 4 for 13-18 mph, 5 for 19-24 mph, 6 for 25-31 mph, 7 for 32-38 mph, 8 for 39-46 mph, 9 for 47-54 mph, 10 for 55-63 mph, 11 for 64-75 mph, and 12 for above 75 mph.
- beehive-shaped charge.** See: **charge, shaped.**
- behind.** The sensing of a tracer or burst which passes to the rear of a moving target, with reference to the course line.
- BELL CRANK.** An item usually in the form of two arms at an angle, having its fulcrum at the apex of the angle, and used to provide a means of changing the direction or varying the intensity of a pushing or pulling force.*
- Belleville spring.** Cupped washer-type spring. Has characteristic of exerting a large force with very small movement.
- belt, ammunition.** 1. Fabric or metal band with loops for carrying cartridges that are fed from it into a machine gun or other automatic weapon. 2. Belt with loops or pockets for carrying cartridges or clips of cartridges. In this meaning, usually called 'cartridge belt.'
- belt, cartridge.** Ammunition belt with loops or pockets for carrying cartridges or clips of cartridges.
- BELT, CARTRIDGE, DISMOUNTED.** See: **belt, cartridge.**
- BELT, CARTRIDGE, MOUNTED.** See: **belt, cartridge.**
- belted ammunition.** Ammunition assembled in metal links or fabric belts.
- belt-fed.** Of automatic weapons: Supplied with cartridges from an ammunition belt.
- belt, feed.** See: **belt, ammunition (sense 1).**
- belt, link.** Ammunition feed belt for an automatic weapon in which metal links connect the cartridges and with them form the belt. See also: **LINK, CARTRIDGE.**
- belt-loading.** Arranging ammunition for an automatic, belt-fed gun in an ammunition belt.
- BELT, POSITIVE DRIVE.** A flat internally toothed belt whose teeth are designed to engage with corresponding teeth on the pulleys over which they run. Excludes cog-type V-belts.*
- belt pull, critical.** The maximum force in pounds which may be applied to the ammunition belt, at a predetermined point, and still permit satisfactory gun operation.
- Benicia Arsenal.** Ordnance Corps field installation, located at Benicia, California.
- Bergmann-Junk test.** See: **heat tests.**
- Bernoulli's principle.** A law of physics stating that as the velocity of a fluid increases, its internal pressure decreases.
An important application of this principle is made in giving lift to an aircraft by means of airfoils, which can be so designed as to increase the velocity of the airflow over their surfaces, and thus decrease its internal pressure. This decreased pressure of the airflow gives lift to the wings (or airfoils) over which it flows.
- beta activity.** A form of radioactivity in which beta particles are emitted from the radioactive body.
- beta particle.** An electron originating within and emitting from a radioactive substance, often producing harmful physiological effects.
- beta radiation.** The radiation of beta particles.
- betatron.** A device that magnetically accelerates electrons, used chiefly to produce very hard X-rays.
- bevatron.** [Billion electron volts + *atron.*] An apparatus designed to bombard atomic nuclei with protons, i.e., with the nuclei of hydrogen, at such speeds as to shatter the nuclei and to charge positively the subatomic particles.
The bevatron, developed at the Berkeley Radiation Laboratory, hurls the protons at speeds of 300,000 miles in 1.85 seconds. Cf: **cosmotron; cyclotron.**
- beyond armor damage.** Any damage beyond or behind the armor, caused by antiarmor ammunition; for example, obscuration, fragmentation, lethality.
- BI (abbr).** 'Base ignition.'
- bias.** *Specif.* The direct-current voltage between two elements of a vacuum tube; grid bias.
- biconical antenna.** An antenna formed by two conical conductors, having a common axis and vertex, and excited at the vertex. When the vertex angle of one of the cones is 180°, the antenna is called a discone.
- bidirectional microphone.** *Electroacoustics.* A microphone in which the response predominates for sound indices of 0° and 180°.
- bifuel propulsion.** Propulsion system which obtains its power from two fuels, one fuel being the oxygen carrier while the other supplies the hydrocarbon. Cf: **monofuel propulsion.**
- bifurcation.** See: **jet breakup.**
- bilateral-area track.** *Electroacoustics.* A photographic sound track having the two edges of the central area modulated according to the signal.
- bilateral observation.** System for determining deviation of impacts or bursts from the target by the use of two instruments and observers located at a distance from each other.
- bilateral tolerance method.** Method of dimensioning and tolerancing wherein the dimension indicates the preferred or desired size or location and the tolerance indicates the permissible variations therefrom, which

- are not necessarily required to be equal in both directions. Cf: **unilateral tolerance method**.
- bilateral transducer.** A transducer capable of transmission simultaneously in both directions between at least two terminations.
- binary cell.** *Electronic computers.* An information-storing element which can have one or the other of two stable states.
- binary-coded decimal system.** *Electronic computers.* A system of number representation in which the decimal digits of a number are expressed by binary numbers.
- binary digit.** *Electronic computers.* A digit of a binary number.
- binary explosive.** High explosive composed of a mixture of two high explosives. Purpose of the mixture is to secure an explosive which is superior to its components in regard to sensitivity, fragmentation, blast or loadability.
- binary number system.** *Electronic computers.* A number system which uses two symbols (usually denoted by '0' and '1') and has two as its base, just as the decimal system uses ten symbols ('0, 1-9') and the base ten. See also: **radix**.
- binary point.** *Electronic computers.* The radix point in the binary system.
- BINNACLE.** A housing for a magnetic compass and related equipment.*
- BINOCULAR.** An optical instrument consisting of two telescopes on a common mounting adapted for stereoscopic use of both eyes of the user.*
- biological agent.** Viruses, any of certain classifications of microorganisms and toxic substances derived from living organisms used to produce death or disease in man, animals and growing plants.
- biological defense.** Defense against biological warfare (which see).
- biological halflife.** The halflife of a radioactive isotope in an animal body.
- biological warfare.** (biowar) Warfare waged by the employment of living organisms, toxic bacteriological products, and chemical plant-growth inhibitors to produce death or casualties in man, animals, or plants; defense against such warfare.
- biowar (abbr).** 'Biological warfare.'
- bipod assembly (of mortars).** Consists essentially of two supporting legs, elevating and traversing mechanisms, and a shock absorbing mechanism. The assembly supports the mortar tube assembly by means of a clamp which, in turn, is attached to the traversing mechanism by means of shock absorber plugs.
- bipod mount.** A mount consisting essentially of two supporting legs. May have other parts, such as described under **bipod assembly (of mortars)**, which see.
- bipropellant.** A rocket propellant consisting of two unmixed chemicals fed to the combustion chamber separately. Cf: **monopropellant**; **multipropellant**.
- bird.** Guided missile. *Slang.*
- Birmingham Ordnance District.** One of the eleven districts into which the United States is divided for purposes of industrial mobilization, procurement, contract negotiation and administration, etc., by the Ordnance Corps. Embraces the States of Florida, Georgia, Alabama, Mississippi, and Louisiana. The main office is located in Birmingham, Ala.
- biting angle.** Smallest angle of impact at which a projectile will penetrate or pierce armor.
- BL (abbr).** 'Bomb line.'
- Black Hills Ordnance Depot.** Ordnance Corps field installation, located at Igloo, South Dakota.
- blackout light.** Lamp put on vehicles for use during blackouts; blackout lamp. It is used because it can be seen from the air only at very close range.
- black powder.** (BP) A low explosive consisting of an intimate mixture of potassium or sodium nitrate, charcoal and sulfur. It is easily ignited and is friction sensitive, but not of the same sensitivity as primer mixes and is not intended to be initiated by friction in ammunition items. Formerly extensively used as a military propellant, but now its military use is almost exclusively in propellant igniters and primers, in fuzes to give short delay, in powder train time fuzes, in blank ammunition, and as spotting charges in practice ammunition.
- BL&P (abbr).** 'Blind loaded and plugged.' (Inert loaded projectile with plugged tracer cavity.)
- BL&T (abbr).** 'Blind loaded with tracer.' (Inert loaded projectile with tracer.)
- blank.** Ammunition which contains no projectile but which does contain a charge of low explosive, such as black powder, to produce a noise.
- blank cartridge.** See: **cartridge, blank**.
- blanketing smoke.** See: **smoke blanket**.
- blast.** 1. The brief and rapid movement of air or other fluid away from a center of outward pressure, as in an explosion; the pressure accompanying this movement. This term is also commonly used as the equivalent of 'explosion,' but the two terms may be distinguished. See: **explosion**. 2. To shatter a building or other object with an explosive. 3. Specifically, to riddle an airplane or other target with a burst of gunfire.
- blast area.** 1. *General.* Area affected by the blast of an explosion. 2. Scorched area of ground in front of, and around, the muzzle of a gun, caused by repeated blasts. See: **blast mark**.
- blast bomb.** See: **bomb, light case**.
- blast chamber.** A combustion chamber, sense 1.
- blast contour.** A graphical representation of the results of tests of bare explosive charges against a given aircraft structure. The contour represents the maximum distance from the center of detonation at which 'A damage' (see: **damage categories**) to the structure would occur, from charges of a certain weight and in a given orientation. A given blast contour applies to only one aircraft structure.
- blast cube.** A structural cube, with corner members of angle iron, and bottom of sheet iron. The other five

sides are covered with sheet aluminum of different thicknesses, scored along the diagonals. An anti-aircraft projectile is exploded at the geometric center of the cube and the extent of damage to the sheet aluminum side is evaluated by a standard method to give a total damage index number. The blast effectiveness of various fillers can be evaluated in this manner.

blast deflector. 1. A device assembled to the muzzle of a cannon to reduce the effects of blast and obscuration caused by the flow of propellant gases into the atmosphere. These gases raise a dust cloud (dependent on ground dust conditions and cannon muzzle height), thereby making it difficult to sight the weapon by direct fire. Blast is undesirable in that it causes physical discomfort to personnel who may be near the cannon.

The blast deflector, by an arrangement of baffles, diverts the flow of propellant gases to the sides of the cannon. This results in reduced obscuration and minimizes blast effect in certain areas around the weapon. 2. A shield around certain gun emplacements in an airplane to deflect blast. See: **blast tube**.

blast effect. Violent air movements and pressure changes and the destruction or damage resulting therefrom, generally caused by an explosion on or above the surface of the earth. Blast effect may be contrasted with the **mining effect** (which see) of an explosion beneath the surface.

blasting cap. See: **CAP, BLASTING**.

blasting fuse. See: **FUSE, BLASTING, TIME**.

BLASTING MACHINE. An item, key- or hand-operated, which is used to generate an electrical impulse to initiate an explosive charge.*

blasting mat. See: **MAT, BLASTING**.

blast mark. Worn area of the ground in front of a gun, caused by the force of the blast of firing. Unconcealed, it may give away the position of the gun. See: **blast area**, sense 2.

blast pressure. The impact pressure of the air set in motion by an explosion.

blast tube. 1. A tubular device surrounding the forward end of the barrel of aircraft guns which, by extending beyond the barrel an effective distance, restrains the blast until it is beyond adjacent aircraft structures which would otherwise be damaged. The blast tube is either attached to the gun or may be supported by the aircraft structure. 2. Sometimes applied to **shock tube** (which see).

blast wave. The air wave set in motion by an explosion.

blast wind. The air set in motion by an explosion.

bleed. Adjust hydraulic brakes or recoil mechanisms by removing part of the fluid in order to get rid of air pockets or to compensate for expansion due to heat.

blending. The process of mixing explosive materials, such as propellant grains, so as to obtain charges of uniform characteristics.

blind bombing. The action of bombing a target that cannot be physically seen from the bombing plane. Cf: **overcast bombing**.

blinding smoke. Small smoke screen placed directly on enemy position to prevent observation.

blip. A spot of light on a radarscope, or an irregularity in the base line on a radarscope, esp. such a spot or irregularity representing the relative position of a reflecting object, as of an airplane. Also called 'pip.'

blister gas. Any of several war gases which produce burning, inflammation, or destruction of tissue, either externally or internally. Also called 'blistering gas.' Such gases were formerly listed as 'vesicants.' Examples: **CHEMICAL AGENT, LEWISITE**; **CHEMICAL AGENT, MUSTARD, DISTILLED**.

blitz. 1. [Short for 'blitzkrieg.'] A smashing, surprise assault with military forces, intended to overwhelm in a single military action the defending forces. The blitz may consist of a single attack or a series of coordinated rapid attacks. It is usually delivered by land and air forces together, but a lightning bomb attack is sometimes called a 'blitz' or 'air blitz.' 2. *The Blitz*, the German bombing attack on Britain in 1940. 3. To attack a nation, city, or defense line with a sudden military assault; to smash or overwhelm.

blitz can. A jerry can. *Slang*.

bln (abbr). 'Balloon.'

block. 1. One or more units of **CHARGE, DEMOLITION** used for demolition purposes. 2. A rectangular prism of wood used as a support in raising or lowering heavy cannon; called, according to thickness, *whole, half, or quarter block*. 3. Stack which is two or more pallet loads or containers wide, two or more deep, and two or more high. 4. *Electronic computers*. Group of words considered as a unit. 5. A **breechblock**.

blockbuster. Any large light case bomb considered powerful enough to destroy a city block. *Colloq.*

The blockbuster, varying in weight from two to eleven tons, was widely used during WW II in Europe.

block carrier. See: **breechblock carrier**.

blood and nerve poison. Poison, especially war gas, which affects the blood or nervous system. Former nomenclature lists this as 'systemic poison.' Now classified separately as **blood gas** and **nerve gas**. See: **blood gas; nerve gas**.

blood gas. War gas which, when absorbed into the body, primarily by breathing, affects body functions through action on the oxygen-carrying properties of the blood and interferes with normal transfer of oxygen from lungs via the blood to body tissues. Examples: **CHEMICAL AGENT, HYDROGEN CYANIDE**; **arsine**; **CHEMICAL AGENT, CYANOGEN CHLORIDE**.

blow. (Sometimes with up.) Explosion.

blowback. 1. The recoil of an unlocked bolt in a firearm. Used with *action, gun*, etc. 2. The forcing of exhaust gas into the intake manifold of an engine during the period when intake and exhaust valves are open at the same time.

blowback gun. Automatic gun operated by the blowback principle, utilizing the pressure of the powder gases to force the bolt to the rear, independently of the barrel which does not move relative to the receiver. The gases, produced by the propelling charge, act against the cartridge case, which in turn acts to force the bolt to the rear.

blowby. The escape of gases past the valves, piston rings, or head gasket of an engine during the compression and power strokes.

blown primer. See: primer, blown.

blatg (abbr). 'Blasting.'

Blue Grass Ordnance Depot. Ordnance Corps field installation, located at Richmond, Kentucky.

blue-streak requisition. A specially processed emergency demand for selected items of Ordnance general supplies which are essential to insure continuous operation and/or for repair of certain major items of guided missile equipment. This includes demands for items needed for test of guided missile systems and Special Weapons material preparatory to firing.

blunderbuss. 1. An obsolete short gun or firearm, with a large bore and usually a bell muzzle, capable of holding a number of balls, and intended to shoot objects at close quarters, without exact aim; hence, 2. Derisive term for any crude or awkward piece of ordnance or for a stupid, blundering fellow.

bmdr (abbr). 'Bombardier.'

bmr (abbr). 'Bomber.'

BOAT, ASSAULT. A square ended or round ended watercraft constructed of rigid materials, designed for landing troops upon a bridgehead. It is unframed except on the bottom, and has a handrail type gunwale for facility in carrying the craft. It is commonly paddled. It may be designed for attaching at the stern to another similar craft.*

boat-tail. 1. Having a tapered-in base; boat-tailed. 2. The base of a projectile when shaped like the frustum of a cone. See: base of projectile.

boat-tailed. Of projectiles: Tapering to the rear from the rotating band.

bobbing target. Practice target that is fully exposed to the firer for the short time that he is given to fire on the target. A bobbing target is pulled down, or turned so that only its edge faces the firer, during the time that the target is not fully exposed.

body. 1. Principal part of any object. 2. Tube of a built-up cannon. 3. That part of a fuze that houses the working parts. 4. The cylindrical portion of the projectile between the bourrelet and the rotating band. 5. The passenger or cargo carrying part of a vehicle. 6. Housing or enveloping component of a cartridge actuated device.

body armor. See: ARMOR, BODY, FRAGMENTATION PROTECTIVE.

body engraving. Scoring on the body of a projectile made by the rifling in the gun bore. Such scoring when it appears is usually on one side of the projectile only, and indicates that the projectile is bearing with excessive force against the same land or lands

throughout its travel down the bore. It may signify eccentric conditions in the ammunition or other such defects.

body, inner. See: inner body.

BODY, PRACTICE HAND GRENADE. An inert metal part, simulating in contour and weight the body of a service hand grenade. The body is designed to accommodate an igniter type of FUZE, HAND GRENADE and a small black powder charge to give indication of functioning. Designed for repeated use in training exercises by replacing fuze and black powder charge.

BODY SECTION, AFT, GUIDED MISSILE. An item which forms the rear section of a guided missile body and when used in conjunction with other sections of a missile body, forms a complete missile. It provides the housing and may contain and/or have accommodations for attaching mechanical, electronic and high explosive component(s).*

BODY SECTION, CENTER, GUIDED MISSILE. An item which forms the center section of a guided missile body and when used in conjunction with other sections of a missile body, forms a complete missile. It provides the housing and may contain and/or have accommodations for attaching mechanical, electronic and high explosive component(s).*

BODY SECTION, FORE, GUIDED MISSILE. An item which forms the forward section of a guided missile body and when used in conjunction with other sections of a missile body, forms a complete missile. It provides the housing and may contain and/or have accommodations for attaching mechanical, electronic and high explosive component(s).*

Bofors. [Bofors Armament Works, Sweden.] A 40-mm automatic cannon of a type developed in Sweden and adopted for manufacture and use by the US and Britain in WW II. The Bofors normally serves as an anti-aircraft weapon.

bogie. 1. Truck or carriage consisting of an axle and two wheels, or two axles and four wheels. Bogies are used to support the weight of a heavy body, such as an artillery gun or railway car. 2. Roller or wheel that rides on the track of a track laying vehicle, and that takes up and distributes the weight of the vehicle along the track. 3. In a motor vehicle, any combination of springs, torque arms, and brackets, that enables two axles to function together, as load-carrying or driving axles.

BOGIE, ARTILLERY. The portion of an artillery weapon, consisting of wheels, axles, and various supporting appurtenances, which is the principal weight bearing unit when the weapon is being transported. It may have a drawbar. When the weapon is emplaced in the firing position, the bogie is either removed or so adjusted that it no longer supports the weight of the weapon. See also: LIMBER.*

bogie axle. See: bogie.

boiler plate. Those articles which are included in Government contracts because regulations require their inclusion in all such contracts. They do not relate specifically to the task to be performed but to

- such matters as termination, disputes, convict labor, Government property, eight-hour day, nondiscrimination, etc. *Slang.*
- bolo.** Heavy, single-edged knife similar to a machete, but usually shorter.
- bolometer.** 1. A very sensitive type of metallic resistance thermometer, used for measurements of thermal radiation. See: detector, infrared. 2. *Electronics.* A small resistive element capable of dissipating microwave power, using the heat so developed to effect a change in its resistance, thus serving as an indicator; commonly used as a detector in low- and medium-level power measurement.
- bolt, gun.** As applied to small arms, that portion of the gun which carries the firing pin, and which closes the rear of the chamber during burning of the propellant; bolt.
- bolt mechanism.** Mechanical assembly in a bolt action gun that includes the moving parts which insert, fire, and extract a round of ammunition.
- BOLT, TOGGLE.** An externally threaded fastener whose threaded portion is of one nominal diameter having a wing or wings mounted on the bolt head or on a trunnion nut. The wing or wings upset when the toggle bolt is inserted in a constricted passage in a hollow wall and when the bolt is tightened, the wing or wings assume a transverse or athwart position. It is used for securely holding fixtures or devices to hollow walls.*
- bom (abbr).** 1. 'Bombardment. 2. 'Bomber.' 3. 'Bombing.'
- Bomarc.** Name applied to an Air Force surface-to-air interceptor type homing missile. It has long range and travels at supersonic speed. Uses a liquid fuel rocket plus two ramjet engines. Has command radar guidance. This winged missile or pilotless bomber is for antiaircraft area defense.
- bomb.** 1. In a broad sense, an explosive or other lethal agent together with its container or holder, which is planted or thrown by hand, dropped from an aircraft, or projected by some other slow-speed device (as by lobbing it from a mortar), and used to destroy, damage, injure, or kill. 2. Anything similar to this object in appearance, operation, or effect, as a leaflet bomb, smoke bomb, photoflash bomb, a bomb-like container or chamber, etc. 3. *Specif.* An aerial bomb. The various types of bombs are separately listed and defined. The term is used in the specific sense (sense 3) in this publication unless otherwise indicated. See: bomb, aerial. 4. To drop bombs, as on a target.
- bomb, aerial.** A bomb designed to be dropped from an aircraft, carrying either a high explosive or another agent, and normally detonated on contact or by a timing device. Usually shortened to merely 'bomb.' Examples: BOMB, FRAGMENTATION; BOMB, GENERAL PURPOSE.
- bomb, antipersonnel.** A small light bomb that bursts into fragments, designed for use against personnel. General term for a small BOMB, FRAGMENTATION (which see).
- bomb, antitank.** A bomb designed or intended to be used against tanks or other armored vehicles.
- bombard.** 1. To hit a target, as a city, fortification, or the like, with bombs, projectiles, grenades, or other explosive missiles. 2. To subject a substance or its atomic nuclei to the impingement of rays or small particles.
- bombardment.** (bom) 1. A sustained attack upon a city, fort, or the like with bombs, projectiles, rockets, or other explosive missiles; the action of bombarding. 2. The action of bombarding atomic nuclei with rays or small particles; an instance of this action.
- bombardment aircraft.** Aircraft designed or used for bombing. See: bomber.
- bombardment aviation.** That aviation chiefly developed for aerial bombardment.
- BOMB, ARMOR-PIERCING.** A missile, designed for dropping from aircraft, which is capable of penetrating the heaviest deck armor without breaking up. Also effective against reinforced concrete structures. Usually contains an explosive charge of Explosive D, weighing about 15 percent of the total weight of the bomb.
- bomb, atomic.** (A-bomb) Meaning formerly limited to a bomb in which the explosive consists of a nuclear-fissionable, radioactive material, as uranium 235 or plutonium 239. Now accepted as synonymous with the term bomb, nuclear (which see).
- bomb ballistics.** The special branch of ballistics concerned with bombs dropped from aircraft.
- bomb bay; also bombay.** The compartment or bay in the fuselage of a bomber where the bombs are carried for release.
- bomb blast.** The blast that results from the explosion of a bomb.
- bomb, blast.** See: bomb, light case.
- bomb, butterfly.** A small fragmentation or antipersonnel bomb equipped with two folding wings which rotate and arm the fuze as the bomb descends. Designed to be dropped in clusters, they are frequently fitted with antisturbance or delay fuzes.
- bomb, buzz.** The V-1 robot plane of World War II, so named for the buzzlike noise of its pulse-jet engine. *Colloquial.* See also: bomb, flying.
- bomb calorimeter.** See: closed bomb.
- bomb capacity.** The capacity of an airplane for carrying bombs. Cf: bomb load.
- bomb carpet.** The fall of bombs or the bombfall pattern produced in carpet-bombing (which see); the area struck by carpet bombing.
- bomb cemetery.** An assigned area to which bombs or other explosive ordnance are taken for final disposal operations after the fuze is made safe.
- bomb, chemical agent.** A bomb having a chemical agent for its main charge. Examples: BOMB, GAS; BOMB, INCENDIARY; BOMB, SMOKE.
- bomb, cobalt.** A theoretical atomic or hydrogen bomb encased in cobalt, the cobalt of which would be transformed into deadly radioactive dust upon detonation.

This bomb is theoretical only in the sense that it is considered too dangerous to use, since the dust would attack friend, foe and neutrals. In the process of detonation, cobalt 59 would be converted into cobalt 60.

bomb complete round. A complete aerial bomb, including all of the components, such as arming wires, fuzes, etc., necessary to attach the bomb to a release mechanism and to make the bomb function after release. See also: **complete round**.

bomb, conventional. Any nonatomic bomb designed primarily for explosive effect, as distinguished from a chemical bomb, leaflet bomb, incendiary bomb, or other special purpose bomb.

bomb crater. An irregular depression formed by the explosion of a bomb.

bomb damage. 1. The physical damage resulting from the detonation of a bomb or from forces set in motion by such detonation, as blast, heat radiation, fire, and radioactivity. Sometimes called 'primary bomb damage.' 2. The effects on a nation's economic, political and social structure which develop directly from accumulated physical damage caused by bombing. Sometimes called 'secondary bomb damage.'

'Bomb damage' is sometimes used in both meanings at once.

bomb damage assessment. (BDA) A judgment on the extent of bomb damage, either physical or economic; the procedure involved in making this adjustment.

This assessment may be made by aerial photography for primary bomb damage, but it may also be done on the ground.

BOMB DAMAGE EVALUATION GROUP. A group which provides facilities for the recording of ballistic data for **bomb damage assessment**. It does not include the recording equipment.*

bomb damage survey. **Bomb damage assessment** (which see) performed by ground parties.

bomb, deep penetration. A bomb designed for deep penetration of the target before exploding.

bomb, delayed action. A bomb having a delay fuze. The delay action may vary from a fraction of a second to several days after impact, depending on the type of fuzing. Bombs or other projectiles having short delay fuzes are used to penetrate targets before exploding; bombs having medium delay fuzes are used for the safety of the plane in low altitude bombing, so that the plane may move away from the point of impact before detonation; bombs having long delay fuzes are normally used to deny territory to the enemy for a period of time, or to allow successive waves of planes to drop their bombs before any of them detonate. Cf: **bomb, time**.

bomb, demolition. Former classification for a bomb that explodes after a short penetration, accomplishing damage and destruction by both blast and underground explosion. A demolition bomb had a charge approximately equal to 50 percent of the bomb's total weight in WW II. See: **BOMB, GENERAL PURPOSE**, the present classification.

BOMB, DEPTH. (DB) An explosive item designed

to be dropped from an aircraft for use against underwater targets. When empty or inert loaded it may be used for training purposes.* Cf: **CHARGE, DEPTH**.

BOMB DIRECTING SET, RADAR. All the items and components required to locate a target by utilizing radar techniques, and also provide facilities for automatic ballistic computation to effect bomb release on a target. It may include optical sighting equipment which is auxiliary to or which may be used independently of the radar equipment.*

bomb disposal. (BD) See: **explosive ordnance disposal**.

bomb disposal unit. See: **explosive ordnance disposal unit**.

bomb, drill. Any uncharged aerial bomb designed or adapted to train ground crews in assembling, fuzing, or other handling of bombs.

bomb, dynamite. An aerial bomb or other explosive device prepared from dynamite sticks.

bomb, earthquake. A large bomb which, when dropped, penetrates and explodes beneath the surface of the earth, giving an effect similar to an earthquake. *Colloq.*

bomb, electron. A German WW II bomb having an incendiary charge and a combustible casing of magnesium. Named after a German trade name *Elektron*.

bomber. (bom) An airplane specifically designed to carry and drop bombs.

bomb, explosive. Any bomb having an explosive as its main charge, as distinguished from a chemical bomb, or the like.

BOMB, FIRE. An item designed to be dropped from an aircraft to destroy or reduce the utility of a target by the effects of combustion. It is designed so as to contain an incendiary mixture which spreads on impact to burn or envelope in flames personnel and material targets, such as vehicles and tents.*

bomb, fission. A bomb that depends upon nuclear fission for release of energy. See: **bomb, atomic**.

bomb, flame. See: **BOMB, FIRE**.

bomb, flash. See: **BOMB, PHOTOFLASH**.

bomb, flying. Popularly, any explosive robot plane, guided missile, or the like; specifically, the German V-1 explosive robot plane of World War II.

BOMB, FRAGMENTATION. An item designed to be dropped from aircraft to produce many small, high velocity fragments when detonated. Effective against personnel and light targets such as automotive materiel and aircraft on the ground.

bomb, fusion. A bomb that depends upon nuclear fusion for release of energy. See: **bomb, hydrogen**.

BOMB, GAS. An item which contains a chemical agent (war gas) and is designed to be dropped from an aircraft.*

bomb gear. A general term applied to the bomb rack and other devices for carrying and dropping bombs.

BOMB, GENERAL PURPOSE. An item designed to be dropped from an aircraft to destroy or reduce the utility of a target by explosive effect. The bomb is

designed to be used against both material targets and personnel. When empty or inert loaded the bomb may be used for training purposes.*

bomb, glide. A bomb, fitted with airfoils to provide lift, carried and released in the direction of a target by an airplane. A glide bomb may be remotely controlled. Certain glide bombs, as the Henschel 293, are initially propelled by a rocket engine; other glide bombs depend for thrust entirely upon the force of gravity. Also called 'glider bomb.' See also: **azon**; **razon**.

bomb, guided. An aerial bomb guided, during its drop, in range or azimuth, or in both.

bomb handling truck. See: **TRUCK, AIRCRAFT BOMB**; **TRUCK, BOMB SERVICE**.

bomb, heavy case. Any high explosive bomb in which the weight of the container is relatively large in proportion to the weight of the bursting charge.

bomb, high capacity. A general purpose bomb designed to produce maximum blast, with a charge weight ratio of more than 70 percent. *British.* Also called 'blast bomb' and 'light case bomb.'

bomb, high explosive. Any aerial bomb charged with a high explosive; specifically, any such bomb chiefly dependent upon only its explosion, or blast effect, to create damage. 'High explosive bomb,' in its broader sense, is a generic term encompassing armor-piercing bombs, general purpose bombs, light case bombs, and semi-armor-piercing bombs. A high explosive bomb is distinguished from a chemical bomb or an atomic bomb, and in its specific sense, from a fragmentation bomb.

bomb, hydrogen. A fusion bomb in which an isotope of hydrogen is made to fuse under intense heat, with a resultant loss of weight and release of energy. Also called the 'H-bomb.' Cf: **bomb, atomic**; **bomb, nuclear**.

BOMB, INCENDIARY. An item designed to be dropped from an aircraft to destroy or reduce the utility of a target by the effects of combustion. It contains an incendiary mixture and is designed to penetrate and destroy relatively noncombustible targets such as buildings and fortifications. When empty or inert loaded it may be used for training purposes.*

BOMB, INCENDIARY, INSTRUCTIONAL. A cylindrical metallic item filled with an incendiary mixture which when ignited is used for instructing personnel in extinguishing fires.*

bombing. The action of dropping bombs from an aircraft with the purpose of hitting a target. See also: **area bombing**; **blind bombing**; **carpet bombing**; **density bombing**; **dive bombing**; **glide bombing**; **horizontal bombing**; **interdiction bombing**; **mass bombing**; **offset bombing**; **overcast bombing**; **pattern bombing**; **precision bombing**; **radar bombing**; **saturation bombing**; **shuttle bombing**; **skip bombing**; **toss bombing**; **train bombing**; **high-altitude bombing**; **low-altitude bombing**; **low-angle bombing**; **low-level bombing**; **medium-altitude bombing**; **minimum-altitude bombing**.

bombing altitude. The absolute altitude at which bombing is done. See: **altitude**, **absolute**.

bombing run. A **bomb run**.

bombing table. A table giving the bombsight settings required for dropping a particular type of bomb at various speeds and altitudes.

BOMB, LEAFLET. A light case bomb (made of sheet metal or laminated plastic) designed to be filled with leaflets, provided with fuze to cause opening before impact, and released from an aircraft, for distribution of the leaflets.

bomb, light case. A type of general purpose bomb having a thin, light, metal casing, giving a high charge weight ratio and designed to accomplish damage primarily by blast. Also called a 'blast bomb.' A light case bomb usually contains a charge of from 70 to 80 percent of the total weight. See also: **BOMB, GENERAL PURPOSE**.

bomb line. A line designated by ground forces, beyond which air attacks may be executed without clearances from the ground forces. This line is a precautionary measure to guard against accidental air attacks on friendly ground forces. The bomb line should be easily identifiable by terrain features from the air and the ground so as to prevent confusion. Formerly known as **bomb safety line**.

bomb load. 1. The weight or number of bombs carried in an airplane; the bomb or bombs carried. 2. Sometimes loosely used in sense of 'bomb capacity.'

bomb, magnesium. 1. An incendiary bomb in which the burning agent is magnesium. 2. A magnesium flare for use from aircraft. See also: **BOMB, INCENDIARY**; **flare, magnesium**.

bomb, magnesium flare. A magnesium flare for use from aircraft. See also: **FLARE, AIRCRAFT**; **flare, magnesium**.

bomb, miniature practice. Miniature bomb, light and inexpensive, used for training of bombers. Fitted with blank cartridge to produce smoke puff upon impact. See: **BOMB, PRACTICE**.

bomb, napalm. A **BOMB, FIRE** filled with napalm, a thickened petroleum oil. The napalm bomb is primarily an antipersonnel weapon and is often distinguished from the **BOMB, INCENDIARY**, which is used primarily against installations or materiel.

bomb nose. The foremost section of a bomb.

bomb, nuclear. A bomb that releases explosive energy either through nuclear fission or nuclear fusion. This term is applied either to the atomic bomb or the hydrogen bomb. See: **bomb, atomic**; **bomb, hydrogen**.

bomb, oil. See: **BOMB, FIRE**; **bomb, napalm**.

bomb, open. In intelligence usage, an undisguised or unconcealed sabotage explosive device, distinguished especially from an **infernal machine**, which see.

bomb, parachute fragmentation. A fragmentation bomb adapted for drop by parachute. Parachute fragmentation bombs are used in low level bombing to give the bombing plane time to escape damage from the bomb explosion, and to cause a bomb attitude which

- produces effective fragment distribution. See also: **BOMB, FRAGMENTATION.**
- bomb, petrol.** See: **BOMB, FIRE;** **bomb, napalm.**
- bomb, phosphorus.** A **BOMB, SMOKE** filled with phosphorus, especially white phosphorus.
- BOMB, PHOTOFLASH.** A missile for dropping from aircraft, containing photoflash mixture with means for providing for functioning at a predetermined distance above the ground, to produce a brilliant light of short duration for photographic purposes.
- BOMB, PRACTICE.** An item designed to be dropped from an aircraft for target practice. It is constructed to simulate service bombs but differs from these in that it can only be used for target practice.*
- bombproof.** 1. A bombproof shelter. 2. Of a shelter, building, or other installation: Resistant or impervious to the effects of bomb explosions.
- bomb rack.** See: **RACK, BOMB, AIRCRAFT;** **SHACKLE, BOMB, AIRCRAFT.**
- bomb, radio guided.** A bomb, such as the azon, guided by radio control from outside the missile. See: **azon;** **bomb, glide.**
- bomb reconnaissance.** Act of reconnoitering to determine the presence of an unexploded missile, ascertaining its nature, applying all practicable protective measures for the protection of personnel, installations and equipment and finally reporting essential information to the authority directing explosive ordnance disposal operations.
- bomb-release line.** (BRL) An imaginary line around a target area at which a bomber, traveling toward it at a constant speed and altitude, releases its first bomb so that it and others will strike the target area.
- bomb-release point.** The point in flight on a bomb run at which a bombing airplane releases its bomb load.
This point is determined by reference to the aiming point, which is on the ground.
- bomb, robot.** An explosive carrying winged missile or rocket, such as the German V-1 or flying bomb, normally launched from the surface and directed in flight toward its target by an automatic pilot and other automatic devices.
- bomb, rocket.** An aerial bomb equipped with a rocket to give it added velocity and penetrating power after being dropped from an aircraft.
- bomb run.** The flight course of a bombing airplane just before the release of bombs; bombing run.
- bomb, sabotage.** An explosive device used by a saboteur to damage, destroy, or injure property or persons.
- bomb safety line.** Former name for bomb line (which see).
- bomb(s) away.** A phrase used as a signal by the bombardier to indicate to the pilot and other members of an aircrew that the bombs have just been released; the instant when the bombs are released.
- BOMB, SEMI-ARMOR-PIERCING.** A missile, designed for dropping from aircraft, which is capable of penetrating lightly armored ships' hulls and reinforced concrete. Usually contains an explosive charge weighing about 30 percent of the total weight of the bomb.
- bomb, service.** Any bomb, regardless of type, for use against an enemy. Service bombs are distinguished from practice bombs and drill bombs. Cf: **bomb, drill;** **BOMB, PRACTICE.**
- bomb service truck.** See: **TRUCK, BOMB SERVICE.**
- bomb shelter.** A bombproof shelter.
- bombsight.** (bomst) A device, which, in the more advanced types, determines, or enables a bombardier to determine, the point in space at which a bomb or bombs must be released from an aircraft in order to hit a target.
- BOMBSIGHT HEAD.** The upper part of a sighting device for aiming aerial bombs. It contains the optical aiming mechanism.*
- BOMB, SMOKE.** A missile, designed to be dropped from aircraft, which contains a filler of smoke producing material with provision for an explosive charge to disperse the filler, and a fuze for functioning.
- BOMB, TARGET IDENTIFICATION.** A missile designed to be dropped from aircraft, which, upon impact, produces a relatively prolonged and conspicuous effect, such as a bright colored light, which provides a means of locating and identifying the target by other aircraft.
- bomb, time.** An aerial bomb or other explosive device that may be set to explode some time after being dropped or planted. Short delay fuzed aerial bombs are not usually classified as time bombs. See: **bomb, delayed action.**
- bomb trailer.** See: **TRAILER, BOMB.**
- bomb, trigger.** Term sometimes applied to a bomb that detonates upon impact, that is, equipped with an impact fuze.
- bomb, unexploded.** (UXB) Bomb which fails to explode on impact or immediately thereafter. It is considered to be a delayed action bomb until the contrary is proved.
- bomb, uranium.** A theoretical atomic or hydrogen bomb encased in uranium, the uranium of which would be transformed into deadly radioactive dust upon detonation.
- bomb yoke.** A lever in the belly of a dive bomber, which is fitted to a bomb and which swings it clear of the propeller upon release.
- bomst (abbr).** 'Bombsight.'
- booby mine.** Land mine used as a booby trap (which see).
- booby trap.** An explosive charge such as a mine, grenade, demolition block, shell or bulk explosive fitted with a detonator and a firing device, all usually concealed and set to explode when an unsuspecting person touches off its firing mechanism as by stepping upon, lifting or moving a harmless looking object. Also often used as a verb.
- boom.** A projecting member or conic truss structure. It may be movable as on a crane or derrick, or fixed

to support another structure as an empennage or rotary rudder of an aircraft.*

BOOM, MINE DETECTOR. A projecting spar or outrigger-like structure which is used to suspend, position and/or support the detecting coils of a mine detector. May be adjustable.*

boost. 1. Bring about a more potent explosion of the main charge of an explosive by using an additional charge to set it off. 2. Supply a machine or engine with a stronger mixture of fuel than would be supplied by normal means.

booster. 1. Assembly of metal parts and explosive charge provided to augment the explosive component of a fuze, to cause detonation of the main explosive charge of the munition. May be an integral part of the fuze. The explosive in the booster must be sufficiently sensitive to be actuated by the small explosive elements in a fuze, and powerful enough to cause detonation of the main explosive filling. 2. Auxiliary propulsion system, employed in the early launching phase of a missile, in addition to the principal propelling means. It may be released from the missile when its impulse has been delivered.

BOOSTER, ANTITANK MINE. An item designed to be filled with explosive material to relay and amplify the detonation wave which activates the main charge of an antitank mine. When empty it may be used for training purposes.*

booster, auxiliary. An additional booster used with a large bursting charge or for special applications. See: **BOOSTER, AUXILIARY, BOMB; BOOSTER, AUXILIARY, ROCKET.**

BOOSTER, AUXILIARY, BOMB. A cylindrical metal container designed to be filled with explosive material to relay and amplify the detonation wave and insure proper detonation of the main charge of a bomb. When empty or inert loaded it may be used for training purposes.*

BOOSTER, AUXILIARY, ROCKET. A cylindrical metal container designed to be filled with explosive material to relay and amplify the detonation wave and insure proper detonation of the main charge of a rocket. When empty or inert loaded, it may be used for training purposes.*

booster coil. An electric coil connected to a battery that supplies high-tension current for starting an engine.

booster, delay arming. A booster incorporating as a safety feature a mechanism which prevents arming until a desired travel or period of time has elapsed.

BOOSTER, DEPTH CHARGE. A cylindrical item designed to contain an explosive to relay and amplify the detonation wave to insure proper detonation of the main explosive charge of a depth charge. When empty or inert loaded it may be used for training purposes.*

BOOSTER KIT, LEAFLET BOMB. A group of items, including a booster, booster adapter, and a length of detonating cord, designed to open a leaflet bomb.*

BOOSTER, TORPEDO. A cylindrical metal container designed to be filled with an explosive material to

relay and amplify the detonation wave to insure proper detonation of the main charge of a torpedo. When empty or inert loaded it may be used for training purposes.*

BOOSTER, UNDERWATER MINE. A cylindrical item containing an explosive for the purpose of amplifying the detonation wave to insure proper detonation of the main explosive charge of an underwater mine. When empty or inert loaded it may be used for training purposes.*

BOOSTER, WARHEAD, GUIDED MISSILE. A major explosive element in the explosive train between a FUZE, GUIDED MISSILE and a WARHEAD, GUIDED MISSILE used to amplify the detonation wave.*

booster well. A hollow space in the main explosive charge of an item of ammunition, into which the booster fits.

bootstrap. *Electronic computers.* The special coded instructions at the beginning of an input tape, together with one or two instructions inserted by switches or buttons into the computer; in circuitry, a positive feedback or regenerative circuit.

bore. 1. The interior of a gun barrel or tube. 2. Inside diameter of an engine cylinder.

bore axis. The longitudinal center line of a gunbore.

bore brush. Brush used for cleaning the bore, and especially the rifling, of a gun.

bore constriction. Constriction (decrease in diameter) in the bore of a gun due to *coppering* or to pressure at bearing shoulders, between the lines and the tube.

bore diameter. The interior diameter or caliber (which see) of a gun or launching tube.

bore erosion. See: *erosion.*

bore evacuation. Clearing of the bore of propellant gases and extraneous material after firing.

bore evacuator. Pneumatic device for clearing the bore of weapons after firing.

bore expansion. Permanent enlargement of the bore of a gun due to interior pressure. It does not include enlargement due to bore erosion, which see.

This may be due to excessive interior pressure developed by the ammunition or to failure of the gun to exhibit the specified elastic strength.

bore gage. See: *star gage.*

bore impression. Impression, made with a plastic substance, of the bore of a gun in order to determine the condition of the rifling.

bore premature. The premature explosion of a projectile, occurring within the bore.

bore pressure. The gas pressure produced in the gun bore or launching tube when the propellant burns. See also: *pressures, gun.*

bore rest. See: *clinometer rest.*

bore riding fuze. See: *fuze, bore riding.*

bore safe fuze. See: *fuze, bore safe.*

bore safety. See: *fuze, bore safe; fuze safety.*

bore scavenging. 1. Removal of the burnt gases from

the cylinder of an internal combustion engine after a working stroke. 2. Sometimes applied in the same sense to the bore of a gun. The preferred term in this sense is *bore evacuation*.

BORESCOPE. A viewing device used to visually inspect the cannon bore of artillery weapons for defects of manufacture and the extent of erosion caused by firing. The item is basically a straight-tube telescope using a mirror or prism. Extension tubes are provided to extend the range of the device to cover the various weapon lengths.* See also: **TUBE, EXTENSION, BORESCOPE.**

bore sight. See: **SIGHT, BORE, BREECH; SIGHT, BORE, MUZZLE; bore sighting.**

bore sighting. The process by which the axis of a gun bore and the line of sight of a gun sight are made parallel or are made to converge on a point. May be applied to any weapon and its sight. See: **SIGHT, BORE, BREECH; SIGHT, BORE, MUZZLE.**

bore sight marks. Vertical and horizontal engraved marks on the face of the muzzle of a cannon, for locating the axis of the bore. Used in bore sighting.

bore telescope. See: **telescope, bore.**

borrow. See: **carry.**

Boston Ordnance District. One of the eleven districts into which the United States is divided for purposes of industrial mobilization, procurement, contract negotiation and administration, etc., by the Ordnance Corps. Embraces the states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island. The main office is located in Boston, Mass.

Boulogne chronograph. See: **chronograph.**

Boulogne screen. See: **chronograph.**

boundary friction. A type of friction that exists when most of the oil film covering two bearing surfaces has been wiped off or otherwise reduced.

Boundary friction is so called because it is intermediate between dry friction and fluid friction.

boundary layer. *Aerodynamics.* A thin layer of air next to an airfoil, distinguishable from the main airflow by distinctive flow characteristics of its own set up by friction. See: **laminar boundary layer; turbulent boundary layer; boundary layer control.**

The boundary layer is sometimes considered to end where its velocity is 99 percent of the free-stream value. The width of a boundary layer increases with the length of the surface over which it is formed.

boundary layer control. The design or control of airfoils and certain airfoil attachments to reduce or remove undesirable aerodynamic effects, as parasite drag, caused by the boundary layer; the science of such design or control.

bound barrel. Barrel that is touching parts of the stock in such a manner that expansion due to heat from firing causes the barrel to bind and bend, resulting in inaccurate fire.

bounding mine. See: **mine, bounding.**

bound vortex. *Aerodynamics.* A hypothetical vortex

circulating around the center-of-pressure line of an airfoil.

The bound vortex is an idealization and simplification of the actual aerodynamic forces acting on a wing, and is used for mathematical purposes.

bourrelet. The cylindrical surface of a projectile on which the projectile bears while in the bore of the weapon. Conventionally the bourrelet is located between the ogive and the body of the projectile and has a slightly larger diameter than the body. In some cases the bourrelet extends the full length of the body. In some projectile designs the conventional bourrelet becomes the front bourrelet, a rear bourrelet being provided behind the rotating band. In other designs a middle bourrelet is provided just forward of the rotating band.

bourrelet, front. See: **bourrelet.**

bourrelet, middle. See: **bourrelet.**

bourrelet, rear. See: **bourrelet.**

bow gun. Gun mounted at the front of a ship or armored vehicle, especially a semifixed, forward-firing gun in tanks.

bow-on. Facing the firer. A bow-on-target is a target that presents its narrower dimension exactly toward the gun firing at it. When an enemy tank is headed exactly at the gun firing at it, the tank is a bow-on target.

bow wave. See: **ballistic wave.**

box barrage. In anti-aircraft artillery fire, an anti-aircraft barrage delivered in a box-shape pattern by guns surrounding a defended target. See: **barrage.**

BOX, CAP. A box, forming part of a demolition kit, designed to house the blasting caps provided with the kit. See: **demolition kit.**

BOX, CARGO, AERIAL DELIVERY. An item of nonflexible material having closed sides, bottom and top, may be collapsible, with fittings and fasteners used for the delivery of cargo. It is dropped from an aircraft by parachute.*

BOX, ENGINE, SHIPPING AND STORAGE. A reusable noncollapsible bi-sectional shipping container, with provisions for bolting the two sections together. It may be designed to be hermetically sealed. It is equipped with complete interior supports and attachments to secure the engine, and with individual mounting provisions or supports for designated accessories. It is equipped to be handled by overhead hoist, fork lift truck or for skidding. Excludes **DRUM, METAL** and **BOX, METAL, SHIPPING.***

BOX, FIBERBOARD. A paperboard container made from either **FIBERBOARD, SOLID** or **FIBERBOARD, CORRUGATED.** It is used primarily as an outer shipping container. Excludes **BOX, FOLDING** and **BOX, SETUP.***

BOX, FOLDING. A container made of bending grades of paperboard or similar materials having its sides formed with ends extended, scored for folding, and in a flat or collapsed form. It is usually used as an inner container, one or more of which may be packed

in an outer container for shipment. Excludes BOX, FIBERBOARD; BOX, SETUP and BOX, SELF-LOCKING.*

BOX, GUIDED MISSILE FINs, SHIPPING AND STORAGE. A reusable noncollapsible shipping container which may be reinforced. It is equipped with complete interior supports to secure guided missile fins from damage during shipping, handling and storage.*

box magazine. See: magazine (sense 2).

BOX, METAL, SHIPPING. A reusable noncollapsible shipping container, equipped to be handled by overhead hoist, fork lift truck or for skidding. It is suitable for protecting critical and sensitive items from damage and pilferage during shipping, handling, and storage. Excludes DRUM, METAL.*

BOX, ROCKET MOTOR FINs, SHIPPING AND STORAGE. A reusable noncollapsible container which may be reinforced. It is equipped with complete interior supports to secure rocket motor fins from damage during shipping, handling, and storage.*

BOX, SELF-LOCKING. A flat sheet of fiberboard or similar material, having no part preformed to resemble a box, but cut and scored to permit forming into a box; the self-locking is accomplished by folding tabs over and into the ends or by inserting side tabs into slits provided; it may be composed of two sheets for telescope style or it may have a cover hinged to one end; occasionally the hinged cover style is furnished with a sleeve inclosure of same material. Excludes BOX, FOLDING and BOX, SETUP.*

BOX, SETUP. A container made of nonbending grades of paperboard or similar material. It is completely formed and nonfolding, and is composed of a body and cover (top). It is usually used as an inner container, one or more of which may be packed in an outer container for shipment. Excludes BOX, FOLDING and BOX, FIBERBOARD.

box trail. Artillery weapon trail composed of a single, rigid member. The three types of box trails are simple box, modified box and tubular. Cf: split trail.

BOX, WOOD. A container with closed sides and bottom, with open, slatted, or closed top. May be shook or assembled type. The sides, bottom and top may be reinforced. If sides and bottom are of frame and sheathing construction, see: CRATE, WOOD.*

BP (abbr). 1. 'Black powder' (explosive). 2. 'Bullet-proof.'

BR (abbr). 'Barrage rocket.'

br (abbr). 'Branch.'

BRACE KIT, FIN ASSEMBLY, BOMB. A group of items designed to reinforce bomb fin assemblies.*

BRACE KIT, FIRE BOMB. A group of items designed to reinforce sway-brace areas of fire bombs.*

bracket. 1. Distance between two strikes or series of strikes, one of which is over the target and the other short of it, or one of which is to the right and the other to the left of the target. 2. Group of shots (or bombs) which fall both over and short of the

target. 3. To obtain a bracket (sense 2) in firing or bombing.

bracket fuze setter. A fuze setter bolted onto the rear end of the fuze-setter bracket; on the caisson of a gun.

bracketing. Sensing applied to range when both overs and shorts in any proportion result from a group of shots fired at the same range or elevation setting. Cf: straddling.

bracketing elevation. An elevation which gives both overs and shorts.

bracketing method. A method of adjusting artillery and mortar fire in which a bracket is established by obtaining an over and a short, with respect to the observer, then successively splitting the bracket in half until a target hit is obtained or the smallest practicable range change has been made.

bracketing salvo. Group of shots in which the number of shots going over the target equals the number falling short of it.

brake. A device by which the motion of any mechanism, as a vehicle, hoist, or engine is retarded or arrested.*

brake, air. The conventional style of mechanically applied brake set by air pressure instead of foot pressure. The pressure of the hand or foot operates an air valve, permitting a flow of air, from cylinders in which it has been stored under pressure, to set the brakes.

BRAKE BAND ASSEMBLY. A circular shaped device of flexible metal, having a replaceable wear lining of friction material, designed to contract upon the outer surface or expand against the inner surface of a drum to retard or stop motion.*

BRAKE DRUM. A circular shaped metal item designed to be connected to a machine or vehicle shaft or wheel and used to retard, stop or prevent motion by the application of pressure exerted by brake(s) or band(s).*

BRAKE, ELECTRIC. A device operated by electromechanical means which functions to bring to rest mechanically and/or hold at rest a load.*

BRAKE, EXPANDER TUBE. A brake consisting essentially of the following: a. A frame designed to fit over and be attached to the torque flange of the axle, and having provisions for housing an expander tube and brake blocks. b. An expander tube which is a flat rubber tube designed to be filled with brake fluid and thereby force brake blocks against the brake drum. c. Brake blocks which may be cemented to the expander tube or fitted into the frame above the expander tube.*

brake fade. A temporary failure in a braking system due to excessive temperature. Term used esp. in connection with automotive vehicles.

BRAKE, FLOOR, WHEELED EQUIPMENT. A jacklike device having various means for mounting on a vehicle frame on one end and a brake shoe or base for floor contact on the other end. It is designed to be used on various wheeled equipment to hold the

equipment in a stationary position while being used or to prevent movement when not in use.*

brake horsepower. The horsepower delivered by a rotating machine for useful work, so called because one of the most common methods of measurement of output is with the Prony brake.

BRAKE LINING KIT. A collection of items consisting of brake linings of specific size(s) together with rivets and/or bolts for fastening the lining to the original brake shoes. Excludes brake shoe kits containing the assembled brake shoes complete with linings, and also brake lining packaged in sheets or rolls.*

brake mean effective pressure. That part of the mean effective pressure which produces the brake horsepower of the engine. (See separate entries.)

BRAKE, MULTIPLE DISK. A brake consisting essentially of the following: a. A brake anchor bracket, also called a carrier assembly, which is the basic unit of the brake. It is designed to be attached to the torque flange of the axle and is also the part upon which the other components of the brake are assembled. b. A floating hydraulically actuated annular piston, or an equivalent mechanical device, used for applying brake pressure. c. Metallic disks keyed to rotate with the wheel alternated with nonrotating disks keyed to the anchor bracket. See also: **BRAKE, SEGMENTED ROTOR.***

brake, muzzle. See: muzzle brake.

BRAKE, SEGMENTED ROTOR. A brake consisting essentially of the following: a. A brake anchor bracket, also called a carrier assembly, which is the basic unit of the brake. It is designed to be attached to the torque flange of the axle and is also the part upon which the other components of the brake are assembled. b. A floating hydraulically actuated annular piston, or an equivalent mechanical device, used for applying brake pressure. c. Segments of brake lining attached to the nonrotating disks.*

BRAKE SHOE, INTERNALLY ACTUATED. A metal item in the shape of an arc, designed to accommodate a friction material lining on the peripheral surface and to be actuated by a cam, lever and/or hydraulic cylinder. It may include lining and adjusting and/or actuation parts. Excludes shoe segments for brake expander tubes.*

BRAKE, SHOE TYPE. A brake consisting essentially of the following: a. A torque spider which is a disk-like metal part designed to fit over and be attached to the torque flange of the axle. b. One or more brake shoes with brake lining attached. c. A hydraulic cylinder(s) or mechanical linkage to provide the force by which the brake shoe is pressed against the brake drum.*

BRAKE, SINGLE DISK. A brake consisting essentially of the following: a. A single piece or divided cylinder housing designed to be mounted on the torque flange of an axle. The cylinder housing has a slot or groove through which the DISK, BRAKE passes. It contains a piston(s) or push rod(s) which provides the hydraulic or mechanical force to press

the LINING, FRICTION against the DISK, BRAKE. b. LINING, FRICTION. c. A DISK, BRAKE designed to be keyed or rigidly attached to a wheel or rotating shaft.*

brazing alloy. A nonferrous product used for joining metals by fusion at a temperature below the melting temperature of the metals being joined. It is made from a metallic alloy and melts at a temperature above 800 degrees F. Use material modifier.*

breadboard model. An uncased assembly of an instrument or other piece of equipment, having its parts laid out on a flat surface and connected together so as to permit a check or demonstration of its operation.

breastwork. Earthwork which gives protection for defenders in a standing position, firing over the crest. Breastworks are constructed wholly or partly above the surface of the ground. See: parapet.

BREATHER. A mechanical device designed to permit a free flow of air into and out of an inclosure, usually used on engine crankcases, vehicular differentials and transmissions, pumps, compressors, and the like. Excludes VENTILATOR (as modified).*

breech. The rear part of the bore of a gun, especially the opening that permits the projectile to be inserted at the rear of the bore.

breech blast. See: backblast.

breechblock. The part of a gun, esp. a cannon, which closes the breech. Cf: bolt, gun.

The breechblock usually contains the firing pin, and in many types of guns it is also used to chamber the round.

breechblock carrier. Hinged member of one type of breech mechanism which guides and supports the rotating breechblock of cannon.

breechblock, eccentric-screw (Nordenfeld). This breechblock is cylindrical and is threaded on its exterior surface to screw into the breech recess, which is correspondingly threaded. The breechblock is much larger in diameter than the bore, and the axis about which it rotates does not coincide with the axis of the bore. There is a U-shaped off-center opening in the block called the loading recess, which coincides with the bore only when the block is in its open position. The ammunition is inserted into the bore through the loading recess. With ammunition inserted as far as it will go, the breechblock is rotated about its axis approximately a half revolution to close the breech and locate the loading recess away from the bore. The firing mechanism is made so that it properly lines up with the bore in closed position. To open the breech, the block is merely rotated in the opposite direction until the loading recess again comes into alignment with the bore.

breechblock, interrupted-screw. Also called *slotted-screw*. Breechblock consisting essentially of a threaded cylindrical block, with longitudinal sectors of the threads removed. The breech recess is likewise threaded, with longitudinal sectors of the threads

removed. In both cases there are an even number of sectors and the threads are removed from alternate sectors. The breechblock is made to move longitudinally into the breech recess without turning, the threaded sector in each instance moving into the blank sector of the mating part. Then with a comparatively small turn, the threads of the breech and block are fully engaged, and the block is locked. If the threads were not cut out as indicated, several full turns of the block would be required to attain the same result.

breechblock operating mechanism. Mechanism which unlocks and withdraws the breechblock from the breech, swings the block clear of the breech recess, and then returns it to the firing, or closed, position after loading. There are two types: carrier-supported and tray-supported, according to whether supported by a breechblock carrier or a breechblock tray.

breechblock, sliding wedge. Breechblock that is rectangular in cross section and slides in a rectangular recess in the breech ring to open and close the breech. Where the motion of the breechblock is vertical, the mechanism is referred to as a *vertical sliding wedge breechblock*. Where the motion is horizontal, the block is called a *horizontal sliding wedge breechblock*.

breechblock, stepped-thread (Welin). A modification of the breechblock, interrupted-screw (which see). The breech recess and the breechblock are cut with a series of stepped threads, so that when the breechblock is inserted and turned in the breech recess, matching sections of stepped threads engage. Using the stepped type of thread, less rotation is necessary to close the breechblock, and greater threaded surface or holding area is possible. This breechblock is used on modern cannon which fire separate-loading ammunition.

breechblock tray. Tray-like support for the breechblock, hinged to the breech of a large cannon, which supports the breechblock when it is withdrawn and permits it to be swung clear of the breech.

breechbore gage. See: *gage, breechbore.*

breech bushing. That part of the gun breech on the interior surface of which the threaded and slotted sectors of the breech recess are formed.

breech flash. Flames and gas flash occurring at breech of weapon.

breech hoop. A steel jacket for reinforcing the breech end of a built-up cannon. It may contain the breech recess which is threaded to receive the breechblock.

breeching space. The linear distance between the face of the fully closed bolt and the apex of the cone formed by a prolongation of the shoulder taper. This distance, however, is sometimes measured from a datum diameter on the first shoulder.

breech interlock. Safety device used with weapons that are loaded or rammed automatically or in weapons in which the position of the breechblock cannot be readily seen by the loader. Functions to prevent the loading or ramming of a round when the breechblock is not fully open.

breech loader. A gun or other weapon that is loaded at the breech instead of at the muzzle. With the exception of mortars, nearly all modern guns are breech loading rather than muzzle loading.

breech loading. A method of loading a weapon in which the ammunition is inserted at the rear of the tube, hence *breech loading gun*, etc.

breech mechanism. The assembly at the rear of a gun which receives the round of ammunition, inserts it in the chamber, fires the round by detonating the primer, and extracts the empty case. See also: *automatic breech mechanism*.

breech operating mechanism. Mechanism used for opening and closing the breech. May be manual, semi-automatic, or automatic in operation. Cf: *breech mechanism*.

breech preponderance. 1. Unbalance of the tipping parts of a weapon when the weight of the 'breech end' exerts a greater moment about the trunnions than does the weight of the 'muzzle end.' Modern weapons usually have a *muzzle preponderance* (which see) because of the trunnions being mounted near the breech end of the tipping parts. Unbalance may be corrected by an equilibrator. 2. The amount of the unbalanced moment.

breech pressure. In interior ballistics, the pressure from the propellant gases, acting against the inner face of the breech block. Because of the movement of the projectile toward the muzzle, a pressure gradient develops, so that the breech pressure is somewhat greater than the pressure acting upon the projectile.

breech recess. Space at the rear of the *barrel assembly* of a cannon, formed in the interior of the breech ring to receive the breechblock.

breech reinforce. That part of a cannon in front of the breech and in the rear of the trunnion band.

breech ring. Breechblock housing, screwed or shrunk onto the rear of a cannon, in which the breechblock engages.

breech tray. See: *spanning tray*.

Bren machine gun. A light machine gun, widely used in WW II, developed in Czechoslovakia and designed for infantry use. It was adopted as a standard weapon by Great Britain and other countries.

brennschluss. [German, 'combustion termination.'] Termination of combustion in a rocket motor or rocket engine, i.e., when the fuel has been expended or shut off.

bridged-T network. *Network topology.* A T-network with a fourth branch connected across the two series arms of the T, between an input terminal and an output terminal.

bridge waves. *Mach waves* caused by the interaction of two *shock waves*, resulting in the formation of a third shock wave, which bridges the volume between the two original waves.

brightness of image. A term used to denote the amount of light transmitted by an optical system to give definition to the image seen by the observer.

brisance. The ability of an explosive to shatter the

- medium which confines it; the shattering effect of the explosive. (Adjective: brisant.)
- Brit** (*abbr.*). 'British.'
- BRL** (*abbr.*). 1. 'Ballistic Research Laboratories.' 2. 'Bomb-release line.'
- broad beam antenna.** *Radar.* An antenna that sends out a broad search beam.
- bromobenzylcyanide.** (BBC) A tear gas, used for training and riot control.
- Browning automatic rifle.** (BAR) Weapon used by US ground troops, developed by John M. Browning, American inventor (1855-1926), but since modified. This rifle, in later models, is so made that its cyclic rate of fire is adjustable.
- Browning machine gun.** Any one of certain caliber .30 and caliber .50 machine guns designed by, or modified from designs by, John M. Browning.
- Bruceton staircase method.** As applied to Ordnance, a statistical approach to the problem of determining as economically as possible the behavior characteristics of explosive components, the testing of which is destructive. By increasing the initiating factor by a predetermined 'step' each time a failure is experienced, and decreasing by the same step each time a functioning occurs, a large amount of data relative to the zone of 50% functioning is obtained, with relatively low number of observations. These data enable a good approximation of the 50% value and the standard deviation to be made.
- brush guard.** A protective device, usually constructed of metal rods, placed in front headlights and radiator grilles of military vehicles.
- B-scope.** A radarscope which presents the range of a target by a vertical displacement of the target signal on the face of the scope, and the bearing by a horizontal displacement.
- btry** (*abbr.*). 'Battery.'
- BuAER** (*abbr.*). 'Bureau of Aeronautics.'
- buffer distance.** *Atomic explosions.* In troop safety considerations, the distance between the limit of radius of safety and the nearest position of friendly troops. It may be expressed in multiples of the circular probable error (CEP).
- BUFFER, RECOIL MECHANISM.** A device or mechanism designed to absorb and check the recoil or counterrecoil force of a weapon when it is fired.*
- bug.** *Slang.* Usually *pl.* A defect in a vehicle, piece of equipment, organization, procedure, or the like.
- built-up gun.** Gun (tube) assembled by shrinkage method. Consists of two or more concentric cylinders shrunk one over another. Stronger than a simple cylinder of the same dimensions. Cf: **monobloc gun.**
- bulk material.** *Maintenance and supply.* Material issued in bulk for general fabrication of items of material (e.g., sheet metal, pipe, tubing, bar stock, gasket material).
- BULLCLAM DOZER, EARTH MOVING.** A tractor mounting apparatus consisting of a blunt, horizontal, metal blade or pusher which acts as a bulldozer, and an upper jaw which is hydraulically operated and fits over the blade, forming a bucket, for moving and lifting materials, such as earth, aggregate, timbers, poles, and the like.*
- Bulldog.** Navy air-to-surface missile powered by solid fuel. Successor to the **Bullpup.**
- BULLDOZER, EARTH MOVING.** A broad, horizontal, metal, pushing blade with framework and equipment for mounting on and parallel to the front of a motorized vehicle; used for ground clearing and earth moving.*
- BULLDOZER-SHOVEL.** A tractor-mounting piece of equipment consisting of a horizontal metal blade and a digging bucket which are interchangeable, for moving, hoisting, digging, and discharging earth, aggregate, and other materials.*
- bullet.** The projectile fired, or intended to be fired, from a small arm.
- BULLET, CALIBER .30.** A projectile suitable for use in a caliber .30 weapon. See: **CARTRIDGE, CALIBER .30** (as modified).
- BULLET, CALIBER .45.** A projectile suitable for use in a caliber .45 weapon. See: **CARTRIDGE, CALIBER .45** (as modified).
- bullet drop.** The vertical drop of a bullet. See: **vertical drop.**
- bullet group.** The bullet holes in a target made by fire from a given small arm from one position, and caused by ballistic variations or inaccurate aim. Usually shortened to 'group.'
- bullet, incendiary.** A bullet having an incendiary charge, used especially against flammable targets.
- bulletproof armor.** (BP armor) Light homogeneous hard armor plate, having a Brinell hardness of 400 to 475, resistant to small caliber armor-piercing bullets. Primarily a British service term.
- bullet pull.** The force required to pull a projectile from its cartridge case. The bullet pull is used as a measure of the uniformity and efficiency of the crimp holding the projectile in the case.
- bullet splash.** Dispersion of finely divided or melted metal produced upon impact of a projectile with armor plate or other hard objects. In general, bullet splash runs 360° around the impact, even when the impact is a glancing blow. The harder the surface impacted by the projectile, the closer to the surface the splash will fly. In general, splash will travel three right angles before becoming ineffective. However, up until the time the third right angle has been traveled, the splash can cause considerable difficulty. Since it flows like water, it will go around curves, will go up or down due to its high pressure, and has been known to cut cables, tubing, and soft steel plate. Splash is best controlled by baffling.
- Bull Goose.** Popular name for an Air Force air-to-air missile designed to confuse enemy radar.
- Bullpup.** Navy missile developed for air-to-surface use. Employs solid fuel and is intended for attack on small targets. See also: **Bulldog.**

- bull's eye powder.** A double base type of propellant used in certain types of small arms ammunition.
- Bumper.** Name given to an early, experimental two-stage rocket, *specif.*, one consisting of the Wac Corporal rocket mounted on the nose of a V-2-type rocket.
- bunching.** *Electronics.* Any process which introduces an rf convection current component into a velocity-modulated electron stream as a direct result of the variation in electron transit time which the velocity modulation produces.
- bundle.** 1. *Electronics.* A package of CHAFF, COUNTERMEASURES. 2. A package or group of packages dropped by parachute to friendly troops cut off from their normal source of supply.
- bunker.** A fortified structure for the protection of personnel, defended gun position, or a defensive position.
- BuORD** (*abbr.*). 'Bureau of Ordnance.'
- BUOY, AUTOMATIC TIME DELAY.** A special floating device developed for use by underwater demolition teams for instantaneous and time delay employment in gap and channel marking.*
- burble.** Separation in the boundary layer of air about a streamlined body, resulting in divergent velocities and pressures, esp. over the upper surface of an airfoil; burbling.
Burble causes loss of lift and increase of drag.
- Bureau of Mines test.** A test for determination of the impact sensitivity of an explosive. A small sample of the explosive is placed between two hardened steel plates, and a weight is dropped upon the upper plate. The figure representing the lowest height in centimeters at which at least one of ten trials results in explosion is the sensitivity index. The highest drop provided is 100 cm, so sensitivity may be given as 100+, meaning that at 100 cm no explosion resulted. See: Picatinny test.
- Bureau of Ordnance.** (BuORD) Branch of Navy having responsibilities pertaining to ordnance.
- Burgund guidance.** A command guidance used by the Germans in WW II for guiding subsonic ground-to-air missiles. The commands were originated by simultaneous visual tracking of the target and missile, resulting in intersection of the two flight paths. The system used a joystick control (the Knuppel), a radio transmitter (the Kohl), and a radio receiver (the Strassburg), which were components common to all of the radio command systems.
- Burlington Ordnance Plant.** Ordnance Corps ammunition plant, located at Burlington, New Jersey.
- burned velocity.** See: burnt velocity.
- burner.** 1. A combustion chamber, or can, in a jet engine. 2. A fuel-injection nozzle in the combustion chamber of a jet engine.
- burner basket.** An inner liner of a jet engine.
- burner drag.** Total drag due to the presence of a combustion system; usually includes the drag forces on the igniter, flame holders, combustion chamber walls, etc.
- burning constant.** In interior ballistics, a figure expressing the relative rate of burning of a propellant. The symbol 'B' is applied to this constant, which has a different value for each type of propellant.
- burning (of propellant).** Each grain of propellant burns in parallel layers in directions perpendicular to all ignited surfaces. The *burning rate* under low pressure, as in the atmosphere, is quite slow but it increases under pressure until, as when confined in a gun, the entire charge is consumed in a small fraction of a second. Most forms of grains will be completely consumed when the least burning thickness (*web*) has been burned through. However, in the multiperforated cylindrical grain, pieces of triangular cross section termed *slivers* remain unburned when the web thickness has been burned through. Usually the slivers are consumed while the projectile is still in the bore, but if the weapon is quite short or if a reduced charge is used, they may be expelled unburned.
- burning rate equation.** In interior ballistics, the equation that gives the rate of regression of the burning surfaces of the propellant grain. The burning rate depends primarily upon the character of the propellant and the pressure surrounding the grain.
- burning rate, proportional, law of.** The assumption, applied to the *burning rate equation*, that the burning rate is directly proportional to the pressure on the propellant gases.
- burning train.** See: igniter train.
- burning type chemical grenade.** See: grenade, chemical, burning type.
- burnout.** 1. The rupturing of the combustion chamber walls in a jet engine due to overheating. 2. A flameout in a jet engine caused esp. by lack of fuel. Cf: *brennschluss*; see: flameout. 3. *Specif.* a. The termination of combustion in a rocket engine due to exhaustion of the fuel supply. b. The time at which this occurs; burnout time.
- burnout time.** The time at which a rocket motor exhausts its fuel supply. Usually measured from the time of ignition.
- burnout velocity.** See: burnt velocity.
- burnt velocity.** The velocity of a rocket, rocket powered aircraft, or rocket powered projectile when fuel combustion terminates; burned velocity; burnout velocity.
- burp gun.** Slang term for submachine gun, which see.
- burst.** 1. Continuous fire from an automatic weapon, as from an aircraft machine gun, sometimes described as *long* or *short*. 2. The explosion of a projectile, bomb, or similar munition.
- burst center.** See: center of burst.
- burster.** An explosive element used in chemical ammunition (which see) to open the container and disperse the contents.
- BURSTER, BOMB.** A cylindrical container filled with explosive material designed to spread and/or detonate the filler of a bomb case.*
- burster tube.** See: tube, burster.
- bursting charge.** See: charge, bursting.

bursting charge explosive train. See: **explosive train.**

bursting layer. Layer of hard material used in the roofs of dugouts or cave shelters. It sets off projectiles fuzed for short delay or immediate detonation before they can enter deeply enough to cause great destruction.

bursting type chemical grenade. See: **grenade, chemical, bursting type.**

burst range. *Gunnery.* Horizontal distance from the piece to the point of burst.

burst wave. Wave of compressed air caused by a bursting projectile or bomb; detonation wave. It may cause extensive local damage.

bus. 1. See: **BUS, MOTOR.** 2. *Electronic computers.* One or more conductors which are used as a path for transmitting information from any of several sources to any of several destinations.

bushing. A replaceable part, cylindrical in shape, hollow, and designed primarily to be inserted in a hole to reduce the effective inside diameter of the hole, and to protect the body structure about the hole from damage resulting from stress, strain, and vibra-

tion. Excludes **BEARING, SLEEVE; GROMMET AND REDUCER** (as modified).*

BUS, MOTOR. A self-propelled wheeled motor vehicle designed for transportation of ten or more passengers on highways and/or roads.*

butt. Rear end of the stock of a rifle or other small arm.

butterfly bomb. See: **bomb, butterfly.**

BUTTONS, TOOLMAKERS'. A set of highly finished cylinders, their ends ground square with the sides and containing drilled holes through their centers. They are used in precision work for locating holes where accuracy is required or from a given point as in drill jigs, die and fixture work.*

butt plate. Metal or rubber covering of the end of the stock on small arms, particularly rifles.

buzz bomb. See: **bomb, buzz.**

BW (*abbr.*). 'Biological warfare.'

bypass port. In a **THRUSTER, CARTRIDGE ACTUATED**, a vent opened at end of stroke to allow flow of gas to another cartridge actuated device.

C

C. The change in elevation that will cause a change of 100 yards in range.

C (*abbr.*). 1. 'Centigrade.' 2. In jato unit nomenclature, designates a composite (picrate-nitrate) propellant.

CAA (*abbr.*). 'Civil Aeronautics Administration.' (Historical.)

CAB (*abbr.*). 'Civil Aeronautics Board.'

cab. The driver's compartment of a self-propelled vehicle or weapon.

CABLE ASSEMBLY, POWER, ELECTRICAL. A definite continuous length of CABLE, POWER, ELECTRICAL having one or both ends processed and/or terminated in fittings which provide for connections to another item. May have branches or forks.*

CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL. A definite continuous length of CABLE, SPECIAL PURPOSE, ELECTRICAL having one or more ends processed or terminated in fittings which provide for connection to other items. Excludes items having branches or forks. Excludes LEAD, TEST.*

cable, coaxial. A transmission line consisting of two conductors concentric with and insulated from each other.

cable cutter, powder actuated. See: **CUTTER, POWDER ACTUATED.**

cable, explosive. See: **CORD, DETONATING.**

Cactus Ordnance Works. Ordnance Corps field installation, located at Dumas, Texas.

CAD (*abbr.*). 'Cartridge actuated device.' (Often pronounced as a word.)

caisson. A two-wheeled vehicle used for carrying ammunition.

cal (*abbr.*). 'Caliber.'

CALCULATING MACHINE. A machine designed to add, subtract and divide automatically. It multiplies automatically or semi-automatically. It may print the figures on a tape, or indicate the figures in a single row of openings (dial) or a multiple row of openings (dials) at top and/or bottom of the machine. It will not print the figures in a given space of a prepared form automatically. It may extract the square root automatically. Excludes ACCOUNTING MACHINE. See also: **ADDING AND SUBTRACTING MACHINE** and **ADDING MACHINE**.*

caliber. (cal) 1. The diameter of a projectile or the diameter of the bore of a gun or launching tube. In rifled arms, the caliber is measured from the surface of one land to the surface of the land directly opposite. Often the caliber designation is based on a nominal diameter and represents a close approximation rather than an exact measurement. Caliber is usually ex-

pressed in millimeters or inches. Examples: A 105-millimeter howitzer and a 6-inch gun have calibers of 105 millimeters and 6 inches, respectively. When expressed as a decimal without an indication of the unit, the unit 'inches' is understood. For example, a caliber .30 cartridge has a bullet which is approximately .30 inches in diameter. 2. The bore diameter (caliber) of a weapon used as a unit for indicating the length of its bore, measured from the breech face of the tube to the muzzle. For example, a 6-inch 50-caliber gun would have a caliber (bore diameter) of 6 inches and a tube length of 50 calibers or 25 feet.

In designating the bore of a shotgun or the size of its cartridge, the gage (which see), rather than the caliber, is customarily used.

calibration. 1. Determining the corrections for a gun or launcher by firing. Calibration is used to bring the center of impact or burst of a weapon to a predetermined point which makes a definite pattern with the centers of burst or impact of the other weapons of the same battery. 2. Measurement of wear in the bore of a gun in order to correct for the difference of muzzle velocity between it and the other guns of a battery. 3. Determining of the corrections to be made in the readings of instruments used in precise measuring.

calibration correction. Correction applied to a gun in a battery to make its center of burst or impact form a definite, predetermined pattern with the centers of burst or impact of the other guns in the same battery.

calibration fire. Preparatory fire having for its purpose the determination of the separate corrections to be applied to the individual guns or launchers of a battery in order to cause all the weapons to hit the same point, or burst or impacts to assume a desired pattern.

calibration point. A point at which calibration fire is conducted.

CALIBRATOR, FREQUENCY. An item which generates a highly accurate signal of one or more fixed frequencies for calibration of frequencies from other sources. Does not include OSCILLATOR (as modified).*

CALIBRATOR, OSCILLOSCOPE. An item by means of which the indications of an OSCILLOSCOPE may be calibrated.*

call-type contract. An instrument under which supplies or services are to be furnished by the contractor upon call by the Government.

calorimetric test. As applied to interior ballistics, the use of a calorimeter to determine the thermochemical characteristics of propellants and explosives. The properties normally determined are heat of combustion, heat of explosion, heat of formation and heat of reaction.

cam. A part mounted on a shaft and used to impart a reciprocating or alternating motion to another part by bearing against it as it rotates.

camber. 1. The rise of the curve of an airfoil section, usually expressed as the ratio of the departure of the curve from a straight line joining the extremities of the curve to the length of this straight line. 'Upper camber' refers to the upper surface; 'lower camber' to the lower surface; and 'mean camber' to the mean line of the section. Camber is positive when the departure is upward and negative when it is downward. 2. A setting of the front wheels of a vehicle, closer together at the bottom than at the top.

Cambridge Research Center. Air Force center responsible for technical developments concerning geophysics, electronics and related physical sciences, and human engineering. Located at L. G. Hanscom Field, Bedford, Massachusetts.

CAMELBACK, TIRE REPAIR. An uncured compound of natural or synthetic rubber, or a combination of both. It is molded or extruded to desired size and shape. The name is derived from its shape, which resembles the hump on a camel's back. The material is produced in roll form and is vulcanized to the tire after being cut to desired length. Used for retreading or recapping pneumatic tires.*

camera chronograph. See: **chronograph.**

camera, Fastax. A high speed camera, used to photograph projectiles in flight, and similar actions requiring an extremely high speed camera.

camera obscura system. System in use at the proving ground by which the flight of a plane is tracked accurately by means of its image being continuously shown and marked on a large drawing table.

camera spotting. Observation of artillery fire using two motion-picture cameras which operate at the same time at opposite ends of a surveyed baseline, and photograph both the target and the burst of the projectile.

CAMOUFLAGE NET SET, GUIDED MISSILE ARTILLERY LAUNCHING SITE. A collection of items consisting of camouflage nets, guy ropes, cable assemblies, and the like. Used to conceal from ground and aerial observation the equipment and personnel engaged in the erection operation of the guided missile and disturbance to the immediate terrain resulting from this operation.*

camouflet. An underground cavity made by an underground explosion which fails to rupture the surface of the earth; the explosive that makes this cavity.

camshaft. Auto. A shaft having cams, the rotation of which raises and lowers the valves of an engine.

canard. [F. 'duck'] An airplane or missile having its stabilizer and elevators forward of the wing.

candle. In pyrotechnics, that portion of the item which, by its progressive combustion, produces smoke or light over a comparatively long period of time.

CAN, GASOLINE, MILITARY. A metal container intended for storage or transportation of liquid fuels and lubricants. It has a common filling and pouring opening and a protective oil interior coating.*

canister. (cnstr) 1. A special short range antipersonnel projectile designed to be fired from rifled guns. It consists of a casing of light sheet metal, which is loaded with preformed submissiles such as small steel balls. The casing is designed so that the rotation causes it to open at, or just beyond, the muzzle of the gun. The submissiles are then dispersed in a cone, giving effective coverage of the area immediately in front of the gun. See also: **cartridge, canister.** 2. In certain special type projectiles, the subassembly or inner container in which the payload is contained, such as CANISTER, SMOKE. 3. That part of a gas mask containing a filter for the removal of poisonous gases from the air being inhaled.

CANISTER, SMOKE. A chemical fill encased in ogival or cylindrical containers for loading into projectiles of chemical shells. When ignited a colored or white smoke is produced.*

cannelure. 1. A groove in a bullet for containing a lubricant, or into which the cartridge case is crimped; a groove in a cartridge case providing a purchase for the extractor; extractor groove. 2. Ringlike groove for locking the jacket of an armor-piercing bullet to the core. 3. Ringlike groove in the rotating band of a gun projectile to lessen the resistance offered to the gun rifling and to prevent fringing; fringing groove. 4. Ringlike groove cut into the outside surface of a watercooled machine gun barrel into which packing is placed to prevent the escape of water from the breech end of the water jacket; cannelure cut. See also: **crimping groove; extractor groove; fringing groove.**

cannibalize. To remove serviceable parts from one item of equipment in order to install them on another item of equipment.

cannon. A complete assembly, consisting of a tube and a breech mechanism, firing mechanism or base cap, which is a component of a gun; howitzer; or mortar. May also include muzzle appendages.* The term is generally limited to calibers greater than one inch. Several calibers and types of cannon are listed in subentries hereunder, with item name in each case.

CANNON, 4.2 INCH MORTAR.

CANNON, 8 INCH GUN.

CANNON, 8 INCH HOWITZER.

CANNON, 37 MILLIMETER AUTOMATIC GUN.

CANNON, 37 MILLIMETER GUN.

CANNON, 37 MILLIMETER GUN, SUBCALIBER.

CANNON, 40 MILLIMETER AUTOMATIC GUN.

CANNON, 40 MILLIMETER DUAL AUTOMATIC GUN.

CANNON, 60 MILLIMETER MORTAR.

CANNON, 75 MILLIMETER ANTI-AIRCRAFT GUN.

CANNON, 75 MILLIMETER AUTOMATIC GUN.

CANNON, 75 MILLIMETER GUN.

CANNON, 75 MILLIMETER GUN, SUBCALIBER.

CANNON, 75 MILLIMETER HOWITZER.

CANNON, 75 MILLIMETER PACK HOWITZER.

CANNON, 76 MILLIMETER GUN.

CANNON, 81 MILLIMETER MORTAR.

CANNON, 90 MILLIMETER ANTI-AIRCRAFT GUN.
CANNON, 90 MILLIMETER GUN.
CANNON, 105 MILLIMETER HOWITZER.
CANNON, 120 MILLIMETER ANTI-AIRCRAFT GUN.
CANNON, 120 MILLIMETER GUN.
CANNON, 155 MILLIMETER GUN.
CANNON, 155 MILLIMETER HOWITZER.
CANNON, 240 MILLIMETER HOWITZER.
CANNON, 280 MILLIMETER GUN.

cannon, aircraft. See: **aircraft cannon.**

cannoneer. Member of an artillery gun or howitzer crew whose primary duty is servicing the piece.

cannon salute. Firing cannon a prescribed number of times to honor a person, vessel, or flag, or to celebrate a special event. Blank ammunition is used for this purpose.

canopy. 1. *Parachute.* The umbrella-like part of a PARACHUTE (as modified) which acts as its main supporting surface. It is usually constructed of fabric and has a framework of suspension lines to suspend the load being carried. 2. An umbrella-like structure that provides a ceiling for simulation of outdoor conditions in the manner that outdoor conditions are simulated in planetaria. 3. *Aircraft.* The overhead transparent inclosure of an aircraft cockpit. Excludes observation domes.*

canopy remover. See: **REMOVER, AIRCRAFT CANOPY.**

cant. 1. Leaning or tilting to one side of any object; especially, the sidewise tilting of a gun. 2. To lean or tilt to the side.

CAN, UTILITY. An item designed for storage or transportation of various liquids, so constructed as to have separate filling and pouring openings.*

cap. *Mechanical.* A protecting and/or closing part, basically circular, designed with an integral means of securing itself and must partially inclose some protruding, external portion of the item to which it is attached. Excludes cover.*

capacitor. *Electrical & Electronic.* An item consisting of two or more electrodes, separated by a dielectric, whose primary purpose is to store electrical energy when connected to a source of potential. (Use type modifier, such as fixed).*

CAPACITOR-RESISTOR. An item consisting of one or more capacitors and one or more resistors molded together or housed together in a common case. The individual capacitors and resistors are not separable and the overall item usually has various design applications, hence, cannot be considered a subassembly. Do not use if a more applicable item name, such as FILTER (as modified), or NETWORK (as modified), exists.*

capacity. *Electronic computers.* The upper and lower limits of the numbers which may be processed in a computer register, e.g., in the accumulator, e.g., the capacity of a computer may be ten decimal digits or the capacity of a computer may be +.00000 00001 to +.99999 99999. Quantities which exceed the capacity

usually interrupt the operation of the computer in some fashion; the quantity of information which may be stored in a storage unit.

CAP, ANTIPERSONNEL MINE. A metal item designed to close the opening of the tube which holds the projectile and spotting charge in an antipersonnel practice mine.*

cap, armor-piercing. A cap fitted over the nose of an armor-piercing projectile and fastened thereto. The cap is usually of forged alloy steel, decrementally hardened so as to have a very hard face and a tough and relatively soft core in contact with the ogival surface of the point of the projectile. Its function is to improve the penetrative quality of the projectile when used against face hardened armor. The use of the cap also decreases the biting angle (which see).

cap, ballistic. See: **ogive, false.**

CAP, BLASTING. A small tube, usually copper or aluminum, closed at one end and loaded with a charge or charges of high explosives, at least one of which is capable of detonating from the spit or sparks from the safety fuse. Electric blasting caps are blasting caps provided with a means for firing by an electric current.

cap, buffer. A light cap of ductile metal, placed over, and in contact with, an armor-piercing cap in some designs of armor-piercing ammunition. The buffer cap is useful in preventing skirting (decapping) armor from prematurely removing the armor-piercing cap. See also: **cap, armor-piercing.**

CAP, IGNITION DISTRIBUTION. A cap, generally of phenolic composition, designed to facilitate the connection of the high tension coil and spark plug leads to the distributor or magneto of an internal combustion engine.*

CAP, NOSE, TORPEDO. An item designed to decrease wind resistance when a torpedo is mounted externally on an aircraft.*

CAP, PILLOW BLOCK. An item designed to be affixed to a base, forming a housing for a removable bearing or the bearing may be an integral part of the housing. It is used to prevent the admission of dirt and/or foreign matter, retain the lubricant and to position a shaft or the like.*

cap-square. That part of a gun or mortar carriage which fits over the trunnion and holds the trunnion in the trunnion-bed.

CAPSTAN. A mechanical device containing a revolving head or spool, vertically mounted, around which one or more turns of rope must be taken for exerting pulling power. The capstan may contain an auxiliary head or spool.*

cap, waterproof protective. See: **cover, fuze.**

car. An administrative wheeled vehicle propelled by a self-contained power unit and designed primarily for the transportation of less than twelve persons.

CAR, ARMORED. A wheeled motor vehicle with protective armor plate designed for combat use and usually equipped with armament. See also: **TRUCK, ARMORED.***

carbine. (cbn) A rifle (which see) of short length

and light weight. It was formerly used chiefly by cavalry and mounted infantry, but in recent years has been used extensively by service troops and others. For information on present service carbine see: **CARBINE, CALIBER .30**.

CARBINE, CALIBER .30. A small arms weapon with a comparatively short barrel, magazine-fed, gas operated, self-loading, automatic or semiautomatic, which is usually fired from the shoulder.* See also: carbine; rifle.

carbon fin. A jet vane (which see) made of carbon and placed directly in the jet stream of a rocket.

carburetor. A mechanical device for atomizing and mixing a liquid fuel with air in correct proportions for combustion.*

CARBURETOR, FLOAT. A carburetor utilizing one or more floats to maintain a constant liquid level.*

Cardan-mounted. Mounted on gimbals.

cargo carrier. See: **CARRIER, CARGO**.

cargo tractor. See: tractor, cargo.

carpet. To cover a target area with bombs.

carpet-bomb. To bomb an area using carpet-bombing techniques; to engage in carpet-bombing.

carpet-bombing. The laying down of bombs in a creeping pattern to cover the area as with a carpet. See also: bomb carpet.

carriage. Mobile or fixed support for a cannon. It sometimes includes the elevating and traversing mechanisms. May be called a gun carriage, howitzer carriage, or mortar carriage. Also pertains to a support such as an armored vehicle, e.g., gun motor carriage, howitzer motor carriage. See: mount.

carrier. 1. Motor vehicle for carrying men or materiel. The term is often combined with a word naming the special function of the carrier; for example, cargo carrier. 2. Harness bag or device for carrying small loads, such as ammunition or gas masks. 3. Part of the mechanism of some automatic guns that helps to set the projectile in its proper firing position. 4. In analysis of a weapons system, that component that brings the weapon or warhead to the target. See: vehicle, sense 3; weapon system. 5. As applied to projectile designs, a sheathing which holds the projectile together at the time of firing, but which does not enter materially into the terminal action. Thus the canister casing (see: canister, sense 1), or the sabot of HVAP shot (see: hypervelocity armor-piercing).

CARRIER, CARGO. A self-propeller full tracked, unarmored vehicle, usually having a watertight hull, primarily designed to transport a small number of personnel or cargo over sand, snow, ice, swamps, or difficult terrain. See also: **CARRIER, CARGO, AMPHIBIOUS**; **CARRIER, PERSONNEL, FULL TRACKED**, and **LANDING VEHICLE, TRACKED**.*

CARRIER, CARGO, AMPHIBIOUS. A track propelled vehicle, designed to carry a small number of troops or cargo across calm waters, principally rivers and swamps. It can also be used as a prime

mover. See also: **CARRIER, CARGO**. Excludes **LANDING VEHICLE, TRACKED**.* Popularly called weasel.

CARRIER, GRENADE. A container of flexible material specifically designed to carry hand grenades. It is designed to be attached to a belt.*

CARRIER, LIGHT WEAPONS, INFANTRY. A wheeled vehicle having a flat load carrying platform, without an operator's compartment or special shock absorbing suspension, but with all-wheel drive and selective front or all-wheel steering. The controls are adjustable to permit operation from a position on the vehicle or from the ground. It is specifically designed to be used in combat areas for transporting light weapons, ammunition and similar cargo.* Popular name: *Mechanical Mule*.

carrier, personnel. Motor vehicle, sometimes armored, used for the transportation of troops and their equipment.

CARRIER, PERSONNEL, FULL TRACKED. A self-propelled, tracklaying, armored combat vehicle, designed to carry personnel and/or cargo. It may or may not have armament.*

CARRIER, PERSONNEL, HALF TRACKED. A self-propelled, combination wheeled and tracklaying vehicle, protected by armor plate, designed to carry personnel and/or cargo and may or may not have armament. Excludes all half-tracked vehicles mounting major guns, howitzers, mortars, multiple guns and combination guns.*

carrot. Popular term for slug (which see) formed by the liner as a result of detonation of shaped charge ammunition.

carry. *Electronic computers*. 1. A signal, or expression, produced as a result of an arithmetic operation on one digit place of two or more numbers expressed in positional notation and transferred to the next higher place for processing there. 2. Usually a signal or expressed as defined in sense 1, which arises in adding, when the sum of two digits in the same digit place equals or exceeds the base of the number system in use. If a carry into a digit place will result in a carry out of the same digit place, and if the normal adding circuit is bypassed when generating this new carry, it is called a **high-speed carry**, or **standing-on-nines carry**. If the normal adding circuit is used in such a case, the carry is called a **cascaed carry**. If a carry resulting from the addition of carries is not allowed to propagate (e.g., when forming the partial product in one step of a multiplication process), the process is called a **partial carry**. If it is allowed to propagate, the process is called a **complete carry**. If a carry generated in the most significant digit place is sent directly to the least significant place (e.g., when adding two negative numbers using nine complements) that carry is called an **end-around carry**. 3. In direct subtraction, a signal or expression as defined in sense 1 which arises when the difference between the digits is less than zero. Such a carry is frequently called a **borrow**. 4. The action of forwarding a carry. 5. The command directing a carry to be forwarded.

carryall truck. Closed body, combination cargo and personnel, carrier with seats which can be removed or adjusted to make space for cargo.

cart. A hand propelled vehicle with two load bearing wheels for transporting small loads. It may have legs or small wheels or rollers for support when standing alone. Excludes TRUCK, HAND (as modified).*

CART, MORTAR AND AMMUNITION. A hand propelled vehicle with two load bearing wheels and attachments for transporting a disassembled mortar and the equipment, ammunition and/or supplies for the mortar. It may have facilities for towing by another vehicle. Excludes CART, PROJECTILE.*

CART, PROJECTILE. A manually propelled two-wheeled vehicle used for transporting projectiles to a cannon. Excludes CART, MORTAR AND AMMUNITION.*

cartridge. (ctg) 1. An assemblage of the components required to function a weapon once; i.e., ammunition for a gun which contains in a unit assembly all of the components required to function a gun once, and which is loaded into the gun in one operation. (The term was formerly restricted to ammunition for small arms, such as caliber .22 and caliber .30 rifles, with various terms applied to artillery weapon assemblages, such as complete round and fixed shell. However, the term 'cartridge,' with suitable modifiers, is now applied to all ammunition meeting the conditions stated.) 2. An explosive item designed to produce gaseous products of combustion under pressure, for performing a mechanical operation other than the common one of expelling a projectile. The item is usually similar to a blank cartridge of small caliber, and the pressure is utilized by a device known as a cartridge actuated device (which see).

cartridge actuated device. (CAD) A device that employs the energy supplied by the gases produced by explosives to accomplish or initiate a mechanical action, other than expelling a projectile. The cartridge which supplies the energy may or may not be included in the device. Cartridge actuated devices are often called 'cads,' pronounced as a word. Examples of cads are REMOVER, AIRCRAFT CANOPY; CATAPULT, AIRCRAFT EJECTION SEAT. See also: cartridge (sense 2).

CARTRIDGE, AIRCRAFT CANOPY REMOVER. An explosive item designed to actuate a REMOVER, AIRCRAFT CANOPY. See: cartridge (sense 2).

CARTRIDGE, AIRCRAFT EJECTION SEAT CATAPULT. An explosive item designed to actuate a CATAPULT, AIRCRAFT EJECTION SEAT. See also: cartridge (sense 2).

CARTRIDGE, AIRCRAFT FIRE EXTINGUISHER. An item consisting of an electric squib(s), a small caliber projectile, and a mounting device. The item is designed for insertion into a liquid fire extinguisher to provide a means for activation of the extinguisher by remote control.* See also: cartridge (sense 2).

CARTRIDGE ASSORTMENT, GRENADE. A group of various sizes of CARTRIDGE, GRENADE.*

cartridge, ball. A cartridge in which the projectile is of the ball type. See also: ball; ball ammunition; cartridge (sense 1).

cartridge belt. See: belt, cartridge.

cartridge, blank. A cartridge (sense 1, which see), consisting of cartridge case, primer, and propellant or black powder, but no projectile. Blank ammunition is used in training, in signaling, and in firing salutes.

CARTRIDGE, BOMB EJECTION. An explosive item used to eject a bomb(s) from a bomb cluster or bomb station. See: cartridge (sense 2); cluster.

CARTRIDGE, BUTTERFLY VALVE. A cartridge used to close the butterfly valve on a runaway shot preventer system of a steam catapult.

CARTRIDGE, CALIBER .22. A rimfire cartridge designed to function in caliber .22 weapons. See also: cartridge (sense 1); rimfire.

CARTRIDGE, CALIBER .22 BLANK. A cartridge, blank (which see) designed for use with caliber .22 rimfire weapons.

CARTRIDGE, CALIBER .22 HORNET. A center-fire cartridge suitable for use in Hornet type rifles, specifically the caliber .22 Hornet Rifle M4 and caliber .22/.410-gage Rifle-Shotgun M6. See: cartridge (sense 1).

CARTRIDGE, CALIBER .30. A cartridge (which see) designed to function in caliber .30 rifles and machine guns.

CARTRIDGE, CALIBER .30 BLANK. A cartridge, blank (which see) designed for use with caliber .30 rifles and machine guns.

CARTRIDGE, CALIBER .30 CARBINE. Cartridge (which see) designed to function in caliber .30 carbines.

CARTRIDGE, CALIBER .30 CARBINE DUMMY. A cartridge, dummy (which see) designed for caliber .30 carbines.

CARTRIDGE, CALIBER .30 DUMMY. A cartridge, dummy (which see) designed for caliber .30 rifles and machine guns.

CARTRIDGE, CALIBER .32. A cartridge (which see) designed to function in caliber .32 weapons.

CARTRIDGE, CALIBER .32 BLANK. A cartridge, blank (which see) designed for caliber .32 weapons.

CARTRIDGE, CALIBER .32 LINE THROWING. A special blank cartridge designed for use in the LINE THROWING DEVICE: caliber .32, deck mounted (Lyle), in conjunction with special projectile and line canister. By its use the line can be projected from one point to another, such as from ship to shore, to establish a connection between the points.

CARTRIDGE, CALIBER .38. A cartridge (which see) designed to function in various caliber .38 revolvers or pistols. It is distinguished as a class from the CARTRIDGE, CALIBER .38 SPECIAL, and CARTRIDGE, CALIBER .380.

CARTRIDGE, CALIBER .38 BLANK. A cartridge, blank (which see) designed for use with caliber .38 weapons.

CARTRIDGE, CALIBER .38 SPECIAL. Cartridge (which see) designed to function in a variety of Colt and S & W caliber .38 special revolvers. Cartridges of this type are identifiable by being longer than other caliber .38 cartridges. The special ball cartridge is 1.53 inches overall and the cartridge case is 1.16 inches long.

CARTRIDGE, CALIBER .38 SPECIAL BLANK. A cartridge, blank (which see) designed for use with caliber .38 special weapons.

CARTRIDGE, CALIBER .380. Cartridge (which see) designed to function in various caliber .380 and 9 mm (short) automatic pistols. Distinguished as a class from **CARTRIDGE, CALIBER .38 SPECIAL** and **CARTRIDGE, CALIBER .38**, and from **CARTRIDGE, 9 MILLIMETER**.

CARTRIDGE, CALIBER .45. Cartridge (which see) designed to function in caliber .45 weapons.

CARTRIDGE, CALIBER .45 BLANK. A cartridge, blank (which see) designed for use with caliber .45 weapons.

CARTRIDGE, CALIBER .45 DUMMY. A cartridge, dummy (which see) designed for caliber .45 weapons.

CARTRIDGE, CALIBER .45 LINE THROWING. A special blank cartridge designed for use in caliber .45 Line Throwing Device, in conjunction with special projectile and line canister. By its use the line can be projected from one point to another, such as from ship to shore, to establish a connection between the points. See also: **PROJECTILE, LINE THROWING GUN**.

CARTRIDGE, CALIBER .45 SHOT. A cartridge, caliber .45, loaded with small shot, duplicating the shot used in shotgun cartridges. See also: **cartridge; shot** (sense 2).

CARTRIDGE, CALIBER .50. A cartridge (which see) designed to function in caliber .50 weapons.

CARTRIDGE, CALIBER .50 BLANK. A cartridge, blank (which see) designed for use with caliber .50 weapons.

CARTRIDGE, CALIBER .50 DUMMY. A cartridge, dummy (which see) designed for caliber .50 weapons.

cartridge, canister. A cartridge assembled with a projectile consisting of a light metal case filled with steel balls, steel fragments, or steel slugs. When fired the projectile breaks upon leaving the muzzle of the weapon and the contents scatter in the manner of a shotgun cartridge. See also: **canister** (sense 1).

cartridge case. See: **CASE, CARTRIDGE**.

CARTRIDGE, CATALYST, TORPEDO. An item designed to decompose hydrogen peroxide into the form of oxygen and water by means of catalytic action to provide a portion of the means of propelling a torpedo.*

cartridge, catapult. See: **CARTRIDGE, AIRCRAFT EJECTION SEAT CATAPULT**.

cartridge clip. See: **CLIP, CARTRIDGE**.

cartridge cloth. See: **cloth, cartridge**.

CARTRIDGE, DELAY. A pyrotechnic item which

provides a predetermined time delay to actuate a release mechanism.

CARTRIDGE, DEPTH CHARGE PROJECTOR. An explosive item used to project a depth charge from a depth charge projector.*

cartridge, drill. An inert cartridge of the same weight, center of gravity and contour as the service assembled round of fixed or semifixed ammunition, designed or adapted for drill purposes.

cartridge, dummy. A cartridge, entirely inert, used for training purposes in the operations of loading and unloading, and in the inspection of the weapon for which intended.

cartridge, electric. A cartridge containing an electric primer and therefore designed to be initiated by an electric current. See: **cartridge; PRIMER, ELECTRIC**.

CARTRIDGE, ENGINE STARTER. An explosive item, designed to furnish energy required to start an airplane engine. See: **cartridge** (sense 2).

cartridge, full. A cartridge (which see) containing a propelling charge intended to produce full service velocity. The term 'full cartridge' is sometimes used as an identifying designation when more than one type of propelling charge is available for a weapon.

CARTRIDGE, 10 GAGE BLANK. A cartridge, blank (which see) loaded in a 10-gage shotgun cartridge case, for use with appropriate adapters as blank ammunition.

CARTRIDGE, .410 GAGE SHOTGUN. A cartridge, shotgun (which see) designed for use in .410-gage weapons.

CARTRIDGE, 12 GAGE SHOTGUN. A cartridge, shotgun (which see) designed for use in 12-gage shotguns.

CARTRIDGE, 16 GAGE SHOTGUN. A cartridge, shotgun (which see) designed for use in 16-gage shotguns.

CARTRIDGE, 20 GAGE SHOTGUN. A cartridge, shotgun (which see) designed for use in 20-gage shotguns.

CARTRIDGE, GRENADE. An explosive item used to propel a grenade from a launcher attached to a rifle or carbine. It differs from a standard type cartridge in that it has no projection and the mouth of the cartridge is closed by crimping.

cartridge, grenade, auxiliary. Small auxiliary cartridge designed to increase the velocity and range of rifle grenades when fired from the rifle or carbine. It is used in addition to the **CARTRIDGE, GRENADE**.

cartridge, grenade, carbine. A **CARTRIDGE, GRENADE** designed to propel a grenade from a launcher attached to a carbine.

cartridge, grenade, rifle. A **CARTRIDGE, GRENADE** designed to propel a grenade from a launcher attached to a rifle.

cartridge headspace. See: **headspace**.

CARTRIDGE, IGNITER, TURBOJET ENGINE. A pyrotechnic item, designed to furnish the flame required to initiate the functioning of a turbojet engine.

CARTRIDGE, IGNITION. An explosive cartridge forming part of the propellant system for mortars. It serves as the inner zone charge and also provides the flame necessary for igniting additional increment charges.

CARTRIDGE, IMPULSE, 5 INCH CATAPULT. An explosive cartridge containing a charge of propellant powder designed to function an airplane launching catapult with 5-inch diameter piston.

CARTRIDGE, IMPULSE, 6 INCH CATAPULT. An explosive cartridge containing a charge of propellant powder designed to function an airplane launching catapult with 6-inch diameter piston.

cartridge, incendiary. Cartridge, usually of small arms ammunition, containing a projectile designed to produce an incendiary effect at the target. See also: **bullet, incendiary.**

CARTRIDGE, 3 INCH 23 CALIBER. A cartridge (which see) intended for use in 3-inch 23-caliber weapons.

CARTRIDGE, 3 INCH 23 CALIBER SHORT. A cartridge, short (which see) designed for 3-inch 23-caliber weapons.

CARTRIDGE, 3 INCH 50 CALIBER. A cartridge (which see) suitable for use in 3-inch 50-caliber weapons.

CARTRIDGE, 3 INCH 50 CALIBER BLANK. A cartridge, blank (which see) designed for 3-inch 50-caliber weapons.

CARTRIDGE, 3 INCH 50 CALIBER DUMMY. A cartridge, dummy (which see) designed for 3-inch 50-caliber weapons.

CARTRIDGE, 3 INCH 50 CALIBER SHORT. A cartridge, short (which see) designed for 3-inch 50-caliber weapons.

CARTRIDGE, 3 INCH 70 CALIBER. A cartridge (which see) suitable for use in 3-inch 70-caliber weapons.

CARTRIDGE, 3 INCH 70 CALIBER DUMMY. A cartridge, dummy (which see) designed for 3-inch 70-caliber weapons.

CARTRIDGE, 4 INCH 50 CALIBER. A cartridge (which see) suitable for use in 4-inch 50-caliber weapons.

CARTRIDGE, 4 INCH 50 CALIBER DUMMY. A cartridge, dummy (which see) designed for 4-inch 50-caliber weapons.

CARTRIDGE, 4 INCH 50 CALIBER SHORT. A cartridge, short (which see) designed for 4-inch 50-caliber weapons.

CARTRIDGE, 4.2 INCH. A cartridge (which see) for use in 4.2-inch weapons.

CARTRIDGE, 5 INCH 25 CALIBER. A cartridge (which see) suitable for use in 5-inch 25-caliber weapons.

CARTRIDGE, 5 INCH 25 CALIBER BLANK. A cartridge, blank (which see) designed for 5-inch 25-caliber weapons.

CARTRIDGE, 5 INCH 25 CALIBER DUMMY. A

cartridge, dummy (which see) designed for 5-inch 25-caliber weapons.

CARTRIDGE, 5 INCH 25 CALIBER SHORT. A cartridge, short (which see) designed for 5-inch 25-caliber weapons.

CARTRIDGE, 5 INCH 38 CALIBER BLANK. A cartridge, blank (which see) designed for 5-inch 38-caliber weapons.

CARTRIDGE, 5 INCH 38 CALIBER DUMMY. A cartridge, dummy (which see) designed for 5-inch 38-caliber weapons.

CARTRIDGE, 5 INCH 38 CALIBER SHORT. A cartridge, short (which see) designed for 5-inch 38-caliber weapons.

CARTRIDGE, 5 INCH 54 CALIBER BLANK. A cartridge, blank (which see) designed for 5-inch 54-caliber weapons.

CARTRIDGE, 5 INCH 54 CALIBER SHORT. A cartridge, short (which see) designed for 5-inch 54-caliber weapons.

CARTRIDGE, 6 INCH 47 CALIBER DUMMY. A cartridge, dummy (which see) designed for 6-inch 47-caliber weapons.

CARTRIDGE, 6 INCH 47 CALIBER SHORT. A cartridge, short (which see) designed for 6-inch 47-caliber weapons.

CARTRIDGE, 8 INCH 55 CALIBER SHORT. A cartridge, short (which see) designed for 8-inch 55-caliber weapons.

CARTRIDGE, INITIATOR. An explosive item designed to activate an INITIATOR, CARTRIDGE ACTUATED.

CARTRIDGE KIT, 75 MILLIMETER DUMMY. A group of items including dummy cartridges, inert fuzes, and replacement parts provided for simulating the handling of service ammunition during training of gun crews.*

cartridge, leaflet. Cartridge containing a projectile, leaflet (which see).

cartridge, line throwing. See: **CARTRIDGE, CALIBER .32 LINE THROWING; CARTRIDGE, CALIBER .45 LINE THROWING.**

cartridge link. See: **LINK, CARTRIDGE.**

CARTRIDGE, 7.62 MILLIMETER. Cartridge (which see) designed to function in 7.62-millimeter lightweight rifles and lightweight machine guns of NATO (North Atlantic Treaty Organization) type. (Although .30-inch and 7.62-millimeter are equal, ammunition items carrying designations caliber .30 and 7.62-millimeter, respectively, are not interchangeable.)

CARTRIDGE, 7.62 MILLIMETER DUMMY. A cartridge, dummy (which see) designed for 7.62-millimeter rifles and machine guns.

CARTRIDGE, 9 MILLIMETER. Cartridge (which see) designed to function in a variety of 9-millimeter submachine guns and automatic pistols of foreign manufacture. The caliber .45 submachine gun, M3, can be converted to use 9-millimeter ammunition by

- use of a conversion bolt and barrel. The term 'Parabellum' forming part of the item name is a part of the name of one of the pistols of Italian manufacture.
- CARTRIDGE, 20 MILLIMETER.** Cartridge (which see) designed for use in 20-millimeter weapons.
- CARTRIDGE, 20 MILLIMETER DUMMY.** A cartridge, dummy (which see) designed for 20-millimeter weapons.
- CARTRIDGE, 20 MILLIMETER, FIRING CIRCUIT TEST.** A cartridge, comprising a cartridge case and electric primer, used for testing the electrical firing circuit of 20-millimeter aircraft guns.
- CARTRIDGE, 30 MILLIMETER.** Cartridge, sense 1 (which see), designed for use in 30-millimeter weapons.
- CARTRIDGE, 30 MILLIMETER DUMMY.** A cartridge, dummy (which see) designed for 30-millimeter weapons.
- CARTRIDGE, 37 MILLIMETER.** Cartridge, sense 1 (which see), designed for use in 37-millimeter weapons.
- CARTRIDGE, 37 MILLIMETER BLANK.** A cartridge, blank (which see), designed for 37-millimeter weapons.
- CARTRIDGE, 37 MILLIMETER DUMMY.** A cartridge, dummy (which see), designed for 37-millimeter weapons.
- CARTRIDGE, 40 MILLIMETER.** Cartridge, sense 1 (which see), designed for use in 40-millimeter weapons.
- CARTRIDGE, 40 MILLIMETER DUMMY.** A cartridge, dummy (which see) designed for 40-millimeter weapons.
- CARTRIDGE, 57 MILLIMETER.** Cartridge, sense 1 (which see), designed for use in 57-millimeter weapons.
- CARTRIDGE, 57 MILLIMETER CANISTER.** A cartridge, canister (which see) designed for use in 57-millimeter weapons.
- CARTRIDGE, 57 MILLIMETER DUMMY.** A cartridge, dummy (which see) designed for 57-millimeter weapons.
- CARTRIDGE, 60 MILLIMETER.** Cartridge, sense 1 (which see), designed for use in 60-millimeter weapons.
- CARTRIDGE, 75 MILLIMETER.** Cartridge, sense 1 (which see), designed for use in 75-millimeter weapons.
- CARTRIDGE, 75 MILLIMETER BLANK.** A cartridge, blank (which see), designed for 75-millimeter weapons.
- CARTRIDGE, 75 MILLIMETER CANISTER.** A cartridge, canister (which see), designed for use in 75-millimeter weapons.
- CARTRIDGE, 75 MILLIMETER DUMMY.** A cartridge, dummy (which see) designed for 75-millimeter weapons.
- CARTRIDGE, 76 MILLIMETER.** Cartridge, sense 1 (which see), designed for use in 76-millimeter weapons.
- CARTRIDGE, 76 MILLIMETER BLANK.** A cartridge, blank (which see) designed for 76-millimeter weapons.
- CARTRIDGE, 76 MILLIMETER CANISTER.** A cartridge, canister (which see) designed for use in 76-millimeter weapons.
- CARTRIDGE, 76 MILLIMETER DUMMY.** A cartridge, dummy (which see) designed for 76-millimeter weapons.
- CARTRIDGE, 81 MILLIMETER.** Cartridge, sense 1 (which see), designed for use in 81-millimeter weapons.
- CARTRIDGE, 90 MILLIMETER.** Cartridge, sense 1 (which see), designed for use in 90-millimeter weapons.
- CARTRIDGE, 90 MILLIMETER BLANK.** A cartridge, blank (which see) designed for 90-millimeter weapons.
- CARTRIDGE, 90 MILLIMETER CANISTER.** A cartridge, canister (which see) designed for use in 90-millimeter weapons. See also: canister (sense 1).
- CARTRIDGE, 90 MILLIMETER DUMMY.** A cartridge, dummy (which see) designed for 90-millimeter weapons.
- CARTRIDGE, 105 MILLIMETER.** A cartridge, sense 1 (which see), designed for use in 105-millimeter weapons.
- CARTRIDGE, 105 MILLIMETER BLANK.** A cartridge, blank (which see) designed for 105-millimeter weapons.
- CARTRIDGE, 105 MILLIMETER DUMMY.** A cartridge, dummy (which see) designed for 105-millimeter weapons.
- CARTRIDGE, 106 MILLIMETER.** A cartridge, sense 1 (which see), designed for use in 106-millimeter weapons.
- CARTRIDGE, 165 MILLIMETER.** A cartridge, sense 1 (which see), designed for use in 165-millimeter weapons.
- CARTRIDGE, PHOTOFLASH.** An explosive assembly for use in making aerial photographs from low altitudes, during reconnaissance missions. Consists of a photoflash charge and delay fuze assembled in a case which, in turn, is assembled in an electrically primed cartridge case together with a small propelling charge.
- CARTRIDGE, PHOTOFLASH, PRACTICE.** An assembly for use for practice or training purposes, to enable simulation of release and firing of photoflash cartridges. See also: CARTRIDGE, PHOTOFLASH.
- CARTRIDGE, 1 POUNDER BLANK.** A cartridge, blank (which see) designed for 1-pounder weapons. (Corresponds to a caliber of 1.457 inches or 37 millimeters.)
- CARTRIDGE, 3 POUNDER BLANK.** A cartridge, blank (which see) designed for 3-pounder weapons. (Corresponds to a caliber of 1.85 inches or 47 millimeters.)
- CARTRIDGE, 6 POUNDER.** A cartridge, sense 1

(which see), designed for use in 6-pounder weapons. (Corresponds to a caliber of 2.24 inches or 57 millimeters.)

CARTRIDGE, 6 POUNDER BLANK. A cartridge, blank (which see) designed for 6-pounder weapons (2.24-inch caliber).

CARTRIDGE, POWDER ACTUATED TOOL. A cylindrical, metallic case containing a charge of smokeless powder. Designed to be fired in a DRIVER, PROJECTILE UNIT, POWDER ACTUATED.*

CARTRIDGE, QUICK RELEASE, PERSONNEL PARACHUTE HARNESS. An explosive item designed to actuate a QUICK RELEASE, PERSONNEL PARACHUTE HARNESS.* See also: cartridge (sense 2).

CARTRIDGE, RELEASE, AIRCRAFT SAFETY LAP BELT. An explosive item designed to release a BELT, AIRCRAFT SAFETY LAP.* See also: cartridge (sense 2).

CARTRIDGE, RELEASE, PERSONNEL PARACHUTE, BACK. An explosive item designed to actuate the release mechanism of a PARACHUTE, PERSONNEL, BACK.* See also: cartridge (sense 2).

cartridge, remover. See: **CARTRIDGE, AIRCRAFT CANOPY REMOVER.**

CARTRIDGE SET, 4.2 INCH INERT. A set of inert chemical projectiles for 4.2-inch guns, for use for instructional purposes.

cartridge, short. (sht ctg) A blank charge in a cartridge case; used to expel a projectile from a gun tube for the purpose of clearing the tube.

cartridge, shotgun. A container or capsule, usually of stiff paper with a brass base, containing primer, powder, wadding, and shot for use in a shotgun. For military use the container is sometimes of 'all aluminum' or 'all brass.' Listed separately according to gage, i.e., **CARTRIDGE, 12 GAGE SHOTGUN**, etc. See also: cartridge (sense 1).

CARTRIDGE, SIGNAL, PRACTICE BOMB. An explosive item inserted in the nose of a practice bomb. It is detonated upon impact and produces a puff of white smoke.*

CARTRIDGE, SUBCALIBER, CALIBER .30. Subcaliber cartridge of caliber .30. See: subcaliber ammunition.

CARTRIDGE, SUBCALIBER, 57 MILLIMETER. A subcaliber training device for 57-millimeter recoilless rifles. See: subcaliber ammunition.

CARTRIDGE, SUBCALIBER, 75 MILLIMETER. A subcaliber training device for 75-millimeter recoilless rifles. See: subcaliber ammunition.

cartridge, test, high pressure. Cartridge for testing weapons. It is designed to produce a higher pressure than that obtained with a standard round. This may be accomplished by any of the following methods or combinations thereof: (1) Increasing the charge weight of standard propellant. (2) Utilizing a propellant of greater quickness. (3) Increasing the projectile weight. Usually the term applies to a

round which, when fired at normal temperature, produces a peak chamber pressure equal to that produced by a standard round stabilized at +160°F.

cartridge, test, low pressure. Cartridge for testing weapons. It is designed to produce a lower pressure than that obtained with a standard round. This generally is accomplished by reducing the charge weight of standard propellant. Usually the term applies to a round which, when fired at normal temperature, produces a peak chamber pressure equal to that produced by a standard round stabilized at -70°F.

CARTRIDGE, THRUSTER. An explosive item designed to actuate a THRUSTER, CARTRIDGE ACTUATED.* See also: cartridge (sense 2).

CARTRIDGE, TORPEDO, IMPULSE. A propelling charge, for use in launching a torpedo.

CARTRIDGE-VIAL, LIFE RAFT. An item consisting of an explosive cartridge assembled to a vial of compressed carbon dioxide. It is designed so that immersion of the cartridge in sea-water initiates an electric current which activates an electric squib thereby releasing the carbon dioxide and providing a means for life raft inflation.*

CARTRIDGE, Y GUN. A cartridge case, containing a charge of propellant powder, designed for use in a projector for depth charges, called a 'Y gun.'

cascaded carry. See: carry.

case. 1. Short for **CASE, CARTRIDGE**. 2. A container designed to hold a specific item(s) in a fixed position by virtue of conforming dimensions and/or attachments. The item(s) which it contains is complete in itself for removal and use outside the container. However, the container may be constructed so as to permit the use of the item(s) without removal. It does not include the item(s). Excludes shipping containers designed to be discarded after shipment of equipment. See also: **CRATE, WOOD; BOX, WOOD** and the like. Use application modifier such as receiver, meter.*

case ammunition. Ammunition in which the propellant is contained in a cartridge case.

CASE, BALLISTIC, ATOMIC BOMB. A ballistically contoured case which is designed to inclose the components of an atomic bomb.*

CASE, CARTRIDGE. An item designed to hold an ammunition primer and propellant, and to which a projectile may be affixed. Its profile and size conform to that of the chamber of the weapon in which the round is fired except for recoilless rifles. For a loaded cartridge case, see: cartridge (as modified).*

CASE, CARTRIDGE, CALIBER .30. A cartridge case suitable for assembling a cartridge for use in a caliber .30 weapon. See also: **CASE, CARTRIDGE**.

CASE, CARTRIDGE, CALIBER .45. A cartridge case suitable for assembling a cartridge for use in a caliber .45 weapon. See also: **CASE, CARTRIDGE**.

CASE, DEPTH CHARGE. A fabricated part of a depth charge designed to hold an explosive charge and mechanisms required to fire this charge. When empty or inert loaded, it may be used for training purposes.*

case ejection. See: ejection.

case ejection chute. A chute or passage through which empty cases are ejected after being fired in a machine gun. See: **CHUTE, EJECTION.**

case extraction. See: extraction.

case harden. To harden iron or steel by carbonizing the surface, thereby forming a very hard shell, or case, to resist wear and abrasion, and leaving a tough backing, or core, to enable the case to withstand shock. Also called 'face-harden,' particularly when applied to armor plate.

casemate. A bombproof structure used as a powder magazine, gun emplacement, or the like.

Case I pointing (or firing). Direct pointing, laying, or fire; gun pointing, in which direction and elevation are set with sight or telescope pointed at the target.

Case II pointing (or firing). Combined direct and indirect pointing, laying, or fire; gun pointing, in which direction is set with a sight or telescope pointed at the target; the elevation is set with an elevation quadrant, range quadrant, or range disk.

Case III pointing (or firing). Indirect pointing, laying, or fire; gun pointing, in which direction is set with an azimuth circle or with a sight or telescope pointed at an aiming point other than the target; the elevation is set with an elevation quadrant, range quadrant, or range disk.

CASE, TIME FUZE. A case designed to hold one or more time fuzes.*

CASE, UNDERWATER MINE. The fabricated outer part of a MINE, UNDERWATER designed to hold an explosive charge and mechanisms required to fire this charge. When empty or inert loaded it may be used for training purposes.*

CASE, UNDERWATER MINE, PRACTICE. The fabricated outer part of a MINE, UNDERWATER, PRACTICE.*

CASING, BALLISTIC FILLER ASSEMBLY, BODY ARMOR. A component part of ARMOR, BODY, FRAGMENTATION PROTECTIVE. It is made of two or more pieces of vinyl film or other suitable material, cut in accordance with applicable patterns and having heat sealed seams. It is designed to permanently encase laminated nylon ballistic cloth filler, which is used specifically in the assembly and fabrication of the finished item.*

casing, bomb. Principal container, usually metal, for the main charge of a bomb.

cast armor. See: armor.

caster. 1. A wheel(s) or the like mounted either in a swivel or a rigid frame, having a stem, socket, angle plate or bolt plate mounting. It is designed for supporting and making equipment portable.* 2. The amount in degrees that the steering knuckle pivots are tilted forward or backward from a true vertical.

cast loading. See: melt loading.

casualty agent. A toxic or lethal chemical agent that can be used effectively in the field.

casualty criteria. Standards by means of which the

ability of ammunition items or fragments therefrom to inflict disabling wounds on personnel may be classified. Three degrees of incapacitating wounds are recognized, as follows: Type A—that which will result in incapacitation within 5 minutes; Type B—that which will result in eventual incapacitation, without the limit of time; Type K—that which will result in incapacitation within 5 seconds.

casualty gas. War gas capable of producing serious injury or death in effective concentrations. See: war gas.

catapult. 1. A device for pushing an airplane, rocket missile, or the like into the air from a ramp, rack, or track, usually at a high initial speed. 2. A device for ejecting a person from an airplane. Cf: launcher. 3. To propel an airplane, rocket missile, or the like from a catapult. Cf: launch. 4. To eject a person from an airplane by means of a catapult. Usually reflexive or passive.

CATAPULT, AIRCRAFT EJECTION SEAT. An item designed to propel an ejection seat with personnel from an aircraft.*

caterpillar band. Endless belt placed on the wheels of a gun carriage for travel over soft or rough ground.

cathode ray. The stream of electrons emitted from a cathode.

cathode-ray indicator. A cathode-ray tube with a calibrated screen to indicate position.

cathode-ray oscilloscope. An OSCILLOSCOPE (which see) incorporating a cathode-ray tube, used esp. as the indicator in a radar set to portray the echoes on its screen.

cathode-ray screen. The luminescent screen of a cathode-ray oscilloscope or tube, which receives the cathode-ray beam.

cathode-ray tube. A vacuum tube in which the deflection of an electron beam indicates on a fluorescent screen instantaneous values of the actuating voltages or currents.

cavitation. Existence of a cavity (which see) or cavities in an explosive charge or liquid propellants.

cavity. Air space or void in explosive charge of a munition. May cause a premature explosion of a projectile in the gun because of collapse of the charge under the force of acceleration under certain conditions of size and location. May also degrade the terminal ballistics.

cavity charge. See: charge, shaped.

cbn (abbr). 'Carbine.'

CBR (abbr). 'Chemical, biological, and radiological.'

CC (abbr). 'Chemical Corps.'

cc (abbr). 'Cubic centimeter(s).'

C damage. See: damage categories.

CE. Tetryl or 2,4,6-trinitrophenylmethylnitramine. (British term.)

ceiling, absolute. The maximum height above sea level at which a given airplane would be able to maintain horizontal flight under standard air conditions.

CELL, ARMING, UNDERWATER MINE. An electrolytic device designed to prevent arming of an underwater mine until immersed in sea water. This device contains a disk which is deteriorated by electrolysis when immersed in sea water thereby permitting operation of the clock starter and extender mechanism.*

cell, binary. See: binary cell.

cellule. A term used technically to designate a wing on one side of a fuselage, complete with struts, trusses, and panels, or that part of a wing between fuselages or nacelles where appropriate. Also called 'cell' or 'plane cell.'

cellulose nitrate. Any of several esters of nitric acid used as explosives or propellants, produced by treating cotton or some other form of cellulose with a mixture of nitric and sulphuric acids. Popularly called 'nitrocellulose' (which see).

cement, Pettman. A mixture of iron oxide, shellac, alcohol, rosin, ethyl cellulose, and pine tar, used to seal fuzes, etc., in projectiles.

center-fire. 1. Of a cartridge: Having the primer in the center of the head, or base. 2. Of a firearm: Using center-fire cartridges. Center-fire cartridges and center-fire small arms are distinguished from rimfire types. Cf: rimfire.

center line. Line indicated on the ground representing the center of traverse of a piece. It is used to facilitate emplacement of heavy artillery to avoid subsequent shifting of the trails.

center of burst. *Antiaircraft.* Point in the air about which the bursts of several projectiles from rounds fired under like conditions are evenly distributed.

center of burst error. Distance between the target and center of burst.

center of dispersion. *Gunnery.* Theoretical center of hits or bursts that would have been made if an unlimited number of shots had been fired with the same data. Actually it has to be considered the center of impact or bursts of all shots already fired.

center of impact. *Gunnery.* Center of the dispersion pattern. Considered from the point of view of range only, it is the range center; from the point of view of direction, the direction center.

center of lift. The mean of all the centers of pressure on an airfoil.

center of pressure. The point in the chord of an airfoil section which is at the intersection of the chord (prolonged if necessary) and the line of action of the combined air forces (resultant air force). Cf: center of lift.

At certain angles of attack, the center of pressure may be located to the rear of the trailing edge of an airfoil.

center of pressure coefficient. The ratio of the distance of a center of pressure from the leading edge of an airfoil to its chord length.

CENTER, TARGET REPAIR. An item used to repair the central portion of a target in order to increase the length of serviceability. It generally consists of

a specified grade of paper or similar material, square or rectangular in appearance, having on its face a figure representing a bull's-eye or silhouetted image with segments of concentric ring(s) or image outline(s). It is usually applied to the target by means of paste or adhesive back surface. When placed on target, the segments are aligned with corresponding lines on target to assure proper centering. Excludes PASTER, TARGET.*

central control. Fire control of weapons from a central location, not by the individual gunner. It is especially used in antiaircraft batteries.

central throttling rod. In a recoil mechanism, a throttling device in which a tapered rod moves in a hollow piston rod to regulate the size of aperture through which the recoil oil flows.

centrifugal casting. The production of metal castings by the use of permanent molds which are rotated during the pouring and solidifying. A high grade steel casting of cylindrical shape may be produced by this process. The process is used in the production of many gun tubes.

CEP (abbr). 'Circular probable error.' The original expression appears to have been 'circular error probability.'

ceramel. See: cermet.

cermet. A product made of ceramic material bonded to metal. Also called 'ceramel.'

cetane number. A test indication of the suitability of a diesel fuel.

cf (abbr). 'Compare.'

CG (abbr). 1. Chemical agent, 'phosgene' (war gas). 2. 'Commanding General.'

CHAFF, COUNTERMEASURES. A thin, flat piece of metal foil, plain or backed, specifically designed to act as a countermeasure against enemy radar when released into the atmosphere. For assorted sizes and types, see: CHAFF SET, COUNTERMEASURES.* See also: rope; window.

CHAFF SET, COUNTERMEASURES. A grouping of two or more assorted sizes or types of countermeasures chaff specifically designed to be released into the atmosphere to act as a countermeasure against enemy radar. For chaff sets consisting of identical sizes and types, see: CHAFF, COUNTERMEASURES.*

chaff shell. See: window projectile.

chain. Indicates, in the case of demolition charges, a number of units of CHARGE, DEMOLITION cast on a length of detonating cord with a short section of cord between adjacent units.

CHAIN ASSEMBLY, TIRE. A series of interconnected metal links forming two or more parallel lengths, cross-connected, usually at right angles. Designed to be fastened over the tread or perimeter of a tire(s) of a vehicle to increase traction and/or prevent skidding.*

chain rammer. A rammer (which see, sense 1) which is power driven and consists essentially of a chain linkage capable of driving the projectile into position

in the gun but 'coiling' into a compact storage position after the power stroke. Used with large caliber guns such as in turrets.

chain-type equilibrator. See: **equilibrator.**

chamber. 1. Part of a gun in which the charge is placed. In a revolver, it is a hole in the cylinder; in a cannon, it is that space between the obturator or breechblock and the forcing cone. Nominally it is the space occupied by the cartridge case. 2. To insert a round of ammunition in the chamber of a firearm or gun.

CHAMBER, AIR BRAKE. A mechanical device employing a flexible diaphragm to convert air pressure into physical force to actuate the brake shoes of a vehicle.*

chamber capacity. In interior ballistics, the volume of the propellant chamber. In guns employing a separate loaded propellant, it is the volume of the entire space between the seated projectile and the closed breechblock. In ammunition employing cartridge cases, it is the volume of the cartridge case behind the projectile. In both types, it includes the annular space around the projectile base.

chamber capacity, effective. In interior ballistics of artillery and small arms, the volume provided for the gases produced by the burning of the propellant, under the initial or starting conditions, including the volume occupied by the propellant. Thus in fixed and semifixed ammunition, it is the interior volume of the cartridge case, less the volume taken up by the projectile base below the rotating band. In separated ammunition the volume taken up by the cartridge case closing plug is deducted from, and the volume of the gun chamber around the base of the projectile is added to, the interior volume of the cartridge case.

Allowance for the volume occupied by the artillery primer, which extends into the cartridge case, is made differently in American and British practice. The British practice is to subtract the volume of the empty primer; the American practice is to subtract the volume of the filled primer.

chambering. That phase of small arms operation that deals with the placing of the round into the chamber after it has been fed into the weapon by the feeding device.

chamber pressure. See: **pressures, gun.**

chambrage. The increase in cross-sectional area from the barrel bore to the chamber.

chan (*abbr.*). 'Channel.'

channel. (*chan*) *Electricity.* An electrical path over which transmission is made from one station to another; a band of radio frequencies wide enough to allow a transmission, as a communication channel.

channel, telemeter. Designates the complete route for transmission of a telemetered function, including pick-up, commutator, modulator, transmitter, receiver, demodulator, decoder, and recorder.

Chapman-Jouguet plane. For a hypothetical, infinite, plane detonation wave: A moving reference plane, behind the initial shock front, in which it is variously

assumed that (a) reaction (and energy release) has effectively been completed; (b) reaction product gases have reached thermodynamic equilibrium; (c) reaction gases, streaming backward out of the detonation, have reached such a condition that a forward-moving sound wave located at this precise plane would remain a fixed distance behind the initial shock.

characteristic length. See: **length, characteristic.**

characteristics, technical. Those characteristics of equipment which pertain primarily to the engineering principles involved in producing equipment possessing desired military characteristics. Example: For electronic equipment, technical characteristics include such items as circuitry, types and arrangement of components.

charge. (*chg*) *Specif.* 1. A given quantity of explosive, either by itself or contained in a bomb, projectile, mine, or the like, or used as the propellant for a bullet or projectile. 2. That with which a bomb, projectile, mine, or the like is filled, as a charge of explosive, thermite, etc. Also called the 'fill,' 'filler,' or 'filling.' 3. In small arms, a cartridge or round of ammunition. 4. To fill with a charge. 5. To place a charge in a gun chamber.

charge, aliquot part. See: **charge, equal section.**

CHARGE ASSEMBLY, DEMOLITION. A group of items including explosives, assembled in a haversack designed for use in beach reconnaissance and underwater demolition missions.*

charge, bag. Propelling charge contained in propellant bag(s). See also: **bag, propellant.**

charge, bare. An explosive charge without casing prepared for use in determining explosive blast characteristics.

charge, base. Base section of a multisection propelling charge, where the sections are not identical.

charge, base ejecting. See: **charge, expelling.**

charge, booster. 1. The explosive charge contained in a booster (which see). 2. The amount of any particular type of explosive used to reliably detonate the bursting charge of the munition.

charge, burster. The explosive charge of a burster (which see).

charge, bursting. The main explosive charge in a mine, bomb, projectile, or the like that breaks the casing and produces fragmentation or demolition.

charge, cased. 1. Propelling charge within a cartridge case. 2. Any explosive charge within a case, as opposed to a bare charge. See also: **case ammunition; charge, bare.**

charge, cavity. See: **charge, shaped.**

charge, confined. An explosive charge, loaded in a resistant container, as opposed to a bare charge. Cf: **charge, bare.**

charge, cratering. Demolition charge for use in blasting craters in roads and for similar demolition. See also: **CHARGE, DEMOLITION.**

charge, cutting. A trough-shaped charge, containing a wedge-shaped or curved metal liner. By projecting a sheet of molten metal upon detonation, it

produces straight line shearing damage rather than a cylindrical hole. See also: **CHARGE, DEMOLITION**; **charge, line**.

charge, delay. A quantity of pyrotechnic composition pressed into a holder which upon burning produces a definite time delay. Used in delay type fuzes.

CHARGE, DEMOLITION. An explosive charge used to produce a blasting, shattering or penetrating effect. It may be shaped so that the energy is concentrated in one direction.* See also: **charge, shaped**.

CHARGE, DEMOLITION, INERT. A CHARGE, DEMOLITION filled with inert material used for training purposes.*

CHARGE, DEPTH. An explosive item designed to be dropped or catapulted from a watercraft for use against underwater targets. When empty or inert loaded it may be used for training purposes. For similar items dropped from aircraft see: **BOMB, DEPTH**.*

charge, detonating. See: **detonating agent**.

charge, equal section. Propelling charge made up of a number of sections equal in size. The number of sections used determines the muzzle velocity and range of the projectile. Cf: **charge, unequal section**.

charge establishment. Process of establishing the correct weight of propelling charge to produce the prescribed muzzle velocity with the prescribed projectile in a particular weapon. Performed at the proving ground.

charge, expelling. Small charge of black powder or other low explosive provided in a base ejection projectile for the purpose of ejecting the contents, such as smoke canisters.

charge, explosive. See: **charge (sense 1)**.

charge, flash. A readily ignitable explosive charge used in ignition elements of electric primers and detonators. Its function is usually to ignite a subsequent charge of lesser sensitivity and greater brisance. See also: **DETONATOR, ELECTRIC; PRIMER, ELECTRIC**.

charge, full. Propelling charge intended to produce full service velocity. The term 'full charge' is sometimes used as an identifying designation when more than one type of propelling charge is available for a weapon.

charge, green bag. In certain cases, two types of propelling charge are provided for one howitzer—one for inner, the other for outer zones of fire. The cloth of the bags for the inner zones is dyed green to distinguish that charge from the other type which is assembled in undyed (white) bags. Accordingly, these two types are called 'green bag' and 'white bag' charges.

charge, igniter. See: **first fire**.

charge, line. 1. A shaped charge consisting of a charge with lined cavity of elongated wedge or curved shape, so that cutting or penetration effect is produced along a line. 2. Charge of split charge blocks assembled around detonating cord and dropped with

attached parachute to keep the chain elongated. See also: **charge, cutting**.

charge, linear. A demolition charge of extraordinary length, in relation to its other dimensions. See: **CHARGE, DEMOLITION**.

charge, lined. A shaped charge with a lined cavity. See also: **charge, shaped**.

charge, multisection. In separate loading or semifixed ammunition, propelling charge that is loaded into a number of propellant bags. Range adjustments can be made by increasing or reducing the number of bags used, as contrasted with a single section charge, in which the size of the charge cannot be changed. Three types of multisection charge are: equal section charge, base and increment charge, and unequal section charge. See also: **charge, propelling**.

charge, normal. Propelling charge intended to produce a normal velocity and be suitable for ordinary targets. The term 'normal charge' is sometimes used as an identifying designation when more than one type of propelling charge is available for a weapon.

charge, pole. Number of blocks of explosive tied together, capped, fused, mounted on the end of a pole, and ready to be fired. The minimum weight of charge is usually about 15 pounds. A pole charge may be placed in a position out of handreach.

charge, powder. See: **charge, propelling**.

CHARGE, PRACTICE HAND GRENADE. A bag of black powder used in a practice type hand grenade for training purposes.*

CHARGE, PROPELLANT INCREMENT. A propelling charge composed of increments, the number of which can be varied to produce the desired muzzle velocity. The item as issued contains the increments required to impart the maximum rated muzzle velocity. Commonly applied to charges for mortars. See also: **charge, propelling**.

charge, propelling. Charge of low explosive that is burned in a weapon to propel a projectile from it; propellant; propellant charge. Burning of the confined propelling charge produces gases which force the projectile out. See also: **low explosive**.

charge, propelling, dummy. A completely inert item, simulating a **charge, propelling** (which see), used for training purposes.

CHARGE, PROPELLING, EARTH ROD. An explosive item in a metal can used to drive a metal rod into earth or shale.* Cf: **charge, propelling**.

CHARGE, PROPELLING, 4.2 INCH. A propelling charge for use in 4.2-inch weapons.

CHARGE, PROPELLING, 5 INCH 38 CALIBER. A **charge, propelling** (which see) for use in 5-inch 38-caliber weapons.

CHARGE, PROPELLING, 5 INCH 38 CALIBER DUMMY. A **charge, propelling, dummy** (which see) for 5-inch 38-caliber weapons.

CHARGE, PROPELLING, 5 INCH 50 CALIBER. A **charge, propelling** (which see) for use in 5-inch 50-caliber weapons.

CHARGE, PROPELLING, 5 INCH 51 CALIBER. A charge, propelling (which see) for use in 5-inch 51-caliber weapons.

CHARGE, PROPELLING, 5 INCH 51 CALIBER DUMMY. A charge, propelling, dummy (which see) for 5-inch 51-caliber weapons.

CHARGE, PROPELLING, 5 INCH 54 CALIBER. A charge, propelling (which see) for use in 5-inch 54-caliber weapons.

CHARGE, PROPELLING, 5 INCH 54 CALIBER DUMMY. A charge, propelling, dummy (which see) for 5-inch 54-caliber weapons.

CHARGE, PROPELLING, 6 INCH 47 CALIBER. A charge propelling (which see) for use in 6-inch 47-caliber weapons.

CHARGE, PROPELLING, 6 INCH 47 CALIBER DUMMY. A charge, propelling, dummy (which see) for 6-inch 47-caliber weapons.

CHARGE, PROPELLING, 6 INCH 50 CALIBER. A charge, propelling (which see) for use in 6-inch 50-caliber weapons.

CHARGE, PROPELLING, 6 INCH 53 CALIBER. A charge, propelling (which see) for use in 6-inch 53-caliber weapons.

CHARGE, PROPELLING, 8 INCH. A charge, propelling (which see) for use in 8-inch weapons.

CHARGE, PROPELLING, 8 INCH DUMMY. A charge, propelling, dummy (which see) for 8-inch weapons.

CHARGE, PROPELLING, 8 INCH 55 CALIBER. A charge, propelling (which see) for use in 8-inch 55-caliber weapons.

CHARGE, PROPELLING, 8 INCH 55 CALIBER DUMMY. A charge, propelling, dummy (which see) for 8-inch 55-caliber weapons.

CHARGE, PROPELLING, 12 INCH 50 CALIBER. A charge, propelling (which see) for use in 12-inch 50-caliber weapons.

CHARGE, PROPELLING, 12 INCH 50 CALIBER DUMMY. A charge, propelling, dummy (which see) for 12-inch 50-caliber weapons.

CHARGE, PROPELLING, 14 INCH 45 CALIBER. A charge, propelling (which see) for use in 14-inch 45-caliber weapons.

CHARGE, PROPELLING, 14 INCH 50 CALIBER. A charge, propelling (which see) for use in 14-inch 50-caliber weapons.

CHARGE, PROPELLING, 14 INCH 50 CALIBER DUMMY. A charge, propelling, dummy (which see) for 14-inch 50-caliber weapons.

CHARGE, PROPELLING, 16 INCH 45 CALIBER. A charge, propelling (which see) for use in 16-inch 45-caliber weapons.

CHARGE, PROPELLING, 16 INCH 45 CALIBER DUMMY. A charge, propelling, dummy (which see) for 16-inch 45-caliber weapons.

CHARGE, PROPELLING, 16 INCH 50 CALIBER. A charge, propelling (which see) for use in 16-inch 50-caliber weapons.

CHARGE, PROPELLING, 16 INCH 50 CALIBER DUMMY. A charge, propelling, dummy (which see) for 16-inch 50-caliber weapons.

CHARGE, PROPELLING, 105 MILLIMETER DUMMY. A charge, propelling, dummy (which see) for 105-millimeter weapons.

CHARGE, PROPELLING, 120 MILLIMETER. A charge, propelling (which see) for use in 120-millimeter weapons.

CHARGE, PROPELLING, 120 MILLIMETER DUMMY. A charge, propelling, dummy (which see) for 120-millimeter weapons.

CHARGE, PROPELLING, 155 MILLIMETER. A charge, propelling (which see) for use in 155-millimeter weapons.

CHARGE, PROPELLING, 155 MILLIMETER DUMMY. A charge, propelling, dummy (which see) for 155-millimeter weapons.

CHARGE, PROPELLING, 240 MILLIMETER. A charge, propelling (which see) for use in 240-millimeter weapons.

CHARGE, PROPELLING, 240 MILLIMETER DUMMY. A charge, propelling, dummy (which see) for 240-millimeter weapons.

CHARGE, PROPELLING, 280 MILLIMETER. A charge, propelling (which see) for use in 280-millimeter weapons.

CHARGE, PROPELLING, 280 MILLIMETER DUMMY. A charge, propelling, dummy (which see) for 280-millimeter weapons.

charger. 1. Short for 'gun charger.' 2. Device for holding several cartridges while they are stripped from it into the magazine space in the gun. Sometimes called cartridge charger; also sometimes called a clip.

charge, reduced. (red chg) Propelling charge intended to produce a velocity below the normal. The term 'reduced charge' is sometimes used as an identifying designation when more than one type of propelling charge is available for a weapon.

charger, gun. See: gun charger.

charge, satchel. Number of blocks of explosive taped to a board fitted with a rope or wire loop for carrying and attaching. The minimum weight of the charge is usually about 15 pounds.

charge section. One of the component parts of a charge that is made up of two or more separate parts.

charge, shaped. (SC) An explosive charge with a shaped cavity. Sometimes called 'cavity charge.' Called 'hollow charge' in Great Britain. Use of the term shaped charge generally implies the presence of a lined cavity.

CHARGE, SIGNAL, EJECTION. An explosive item designed to eject a signal from a MINE, UNDER-WATER when used for training.*

charge, single section. Propelling charge in separate loading ammunition that is loaded into a single propellant bag. A single section charge cannot be

reduced or increased for change of range, as can a multisection charge. See also: **charge, propelling**.
charge, special. Propelling charge intended to produce a special (high) velocity. The term 'special charge' is sometimes used as an identifying designation when more than one type of propelling charge is available for a weapon.

charge, spotting. A small charge, usually of black powder, in a practice bomb, practice mine, or the like, to show the location of its point of functioning. Also, occasionally, used in service ammunition. See also: **CHARGE, SPOTTING, BOMB; CHARGE, SPOTTING, MINE.**

CHARGE, SPOTTING, BOMB. An item used with practice bombs to mark the point of impact for training drops. It may also be used with empty bombs for training personnel.*

CHARGE, SPOTTING, MINE. An item designed to simulate the explosion of a bounding antipersonnel mine.* See also: **SIMULATOR, ANTIPERSONNEL MINE PROJECTILE.**

charge, stacked. Propelling charge in which the propellant grains lie end to end within the propellant bag.

charge, sticky. An explosive charge covered with an adhesive substance to make it stick against an object when thrown or planted. Also called 'sticky grenade.'

charge, supplementary. A small, removable explosive charge used in the fuze cavity of deep cavitized munitions. The charge must be removed if the munition is to be fitted with a proximity fuze, since a deep cavity is required for this fuze.

charge, target. Propelling charge intended to produce a velocity less than normal, and considered to be suitable for target practice purposes. The term 'target charge' is sometimes used as an identifying designation when more than one type of propelling charge is available for a weapon.

charge, traveling. A propelling charge which travels along the bore with the projectile as burning takes place; also called **Langweiler charge**.

charge, unequal section. A propelling charge in separate loading or semifixed ammunition, divided into a number of increments, not all of which are alike. Cf: **charge, equal section.**

charge, wedge. Explosive charge using a wedge shaped cavity, lined or unlined. See: **charge, cutting.**

charge weight ratio. The ratio of the weight of a charge, especially an explosive charge, to the total weight of the complete bomb, projectile, or the like, that contains the charge.

charge, white bag. See: **charge, green bag.**

charging cable. A cable attached to the bolt of an aircraft machine gun or cannon for drawing back the bolt manually in order to charge the piece.

Charlotte Ordnance Missile Plant. Ordnance Corps missile assembly plant, located at Charlotte, North Carolina.

chase. The exposed part of a gun (artillery) in front of the trunnion band or cradle.

chassis. 1. The movable base on which the top car-

riage of a gun moves. 2. A base frame of movable railway for running a barrette-, or a casemate-gun, in and out of battery. 3. The frame or underpart of an automotive vehicle, including the attached wheels. 4. The framework of an airplane.

chatter. A low-speed vibration which can be heard or felt in a piece of machinery or other equipment.

check problem. *Electronic computers.* A problem whose incorrect solution indicates an error in the operation or programming of a computer.

cheese antenna. A cylindrical reflector having two plates perpendicular to it spaced so as to permit the propagation of more than one mode in the desired direction of polarization.

chemical agent. *Military.* A chemical item either solid, liquid or gas divided into three principal categories, war gases, smokes, and incendiaries. It is developed for the purpose of conducting defensive and/or offensive warfare. Through its chemical properties it produces lethal, injurious, or irritant effects resulting in casualties; a screening or colored smoke; or it acts as an incendiary agent.

CHEMICAL AGENT, CHLOROACETOPHENONE. (CN) Tear gas, causing irritation of eyes, skin, and upper respiratory passages. No permanent effects. Used for training and riot control.

CHEMICAL AGENT, CHLOROACETOPHENONE CAPSULE. (CN CAPSULE) Chemical Agent, Chloroacetophenone (tear gas) in prepared capsule form, used for training purposes. See also: **CHEMICAL AGENT, CHLOROACETOPHENONE.**

CHEMICAL AGENT, CHLOROACETOPHENONE PELLET. (CN PELLET) Chemical Agent, Chloroacetophenone (tear gas) in prepared pellet form, used for training purposes. See also: **CHEMICAL AGENT, CHLOROACETOPHENONE.**

CHEMICAL AGENT, CHLOROACETOPHENONE SOLUTION. (CN) (CNC) (CNS) (CNB) Solution of Chemical Agent, Chloroacetophenone (tear gas). Three solutions which have been used are chloroacetophenone in chloroform; mixture of chloroacetophenone and chloropicrin in chloroform; and chloroacetophenone in a mixture of carbon tetrachloride and benzene. These are distinguished by the abbreviations CNC, CNS and CNB, respectively. See also: **CHEMICAL AGENT, CHLOROACETOPHENONE.**

CHEMICAL AGENT, CYANOGEN CHLORIDE. (CK) A low persistence, quick acting, casualty gas, which interferes with utilization of oxygen by body tissues and hemoglobin. A liquid at normal temperatures; one of the 'blood gases.'

CHEMICAL AGENT, DIPHENYLAMINECHLOROARSINE. (DM) Popular name—adamsite. Solid, dispersed by heat to produce an aerosol causing skin and eye irritation, chest distress and nausea. Relatively nontoxic. One of the 'vomiting gases.' Used for training and riot control.

CHEMICAL AGENT, DIPHENYLCHLOROARSINE. (DA) Solid, dispersed by heat to produce an aerosol causing skin and eye irritation, chest distress

and nausea. Relatively nontoxic. One of the 'vomiting gases.' Used for training and riot control.

CHEMICAL AGENT, DIPHENYLCYANOARSINE. (DC) Solid, dispersed by heat to produce an aerosol causing eye and mucous membrane irritation, chest distress and nausea. Some temporary toxic effect. One of the 'vomiting gases.' Used for training and riot control.

CHEMICAL AGENT, GREEN SMOKE. A chemical agent, producing a green smoke, used for a variety of tactical purposes such as identifying targets and friendly units, and for spotting purposes in ranging shots. Designated a 'signaling smoke.'

CHEMICAL AGENT, HEXACHLOROETHANE MIXTURE. (HC) A smoke producing agent, consisting of a mixture of grained aluminum, zinc oxide and hexachloroethane. The smoke is produced by burning of the mixture, induced by a suitable ignition charge. Used to produce a screening smoke.

CHEMICAL AGENT, HYDROGEN CYANIDE. (AC) A quick acting casualty gas of low persistency, which interferes with utilization of oxygen by the body tissues. A gas at temperatures only slightly above normal room temperature. One of the 'blood gases.' Popular name—prussic acid.

CHEMICAL AGENT, INCENDIARY MIXTURE. A mixture of certain metals, oxidizers and/or petroleum fractions to form a powder or a pasty, flammable mass. Readily ignited by fuze action.

CHEMICAL AGENT, INCENDIARY OIL. An incendiary liquid or gel consisting of gasoline and fuel oil, with or without a thickening agent (necessary to produce a gel). Peptizers may also be used with thickening agent, to facilitate formation of a gel.

CHEMICAL AGENT, ISOPROPYL METHYLPHOSPHONOFUORIDATE. (GB) Nontechnical name *sarin*. A quick acting casualty gas of medium persistency. Liquid at normal temperature. Very rapid lethal effect, attacking the nerve system. One of the 'nerve gases.'

CHEMICAL AGENT, LEWISITE. (L) A moderately delayed action casualty gas. A 'blister gas,' toxic lung irritant and systemic poison. Produces immediate and strong stinging sensation of the skin. Dichloro (2-chlorovinyl) arsine.

CHEMICAL AGENT, MUSTARD, DISTILLED. (HD) A delayed action casualty gas. A blister gas, acts as cell irritant and cell poison. (Distilled refers to a purifying process, which greatly reduces the odor, and therefore increases the difficulty of detection.)

CHEMICAL AGENT, MUSTARD GAS. (H) A delayed action casualty gas. A blister gas, acts as cell irritant and cell poison. Contains about 30 percent sulfur impurities, giving it a pronounced odor.

CHEMICAL AGENT, MUSTARD, SIMULATED. (SIMULATED H) Material having physical properties similar to 'mustard gas,' used for testing dispersion apparatus and munitions and for training purposes. Specifically a 25 percent solution by volume of molasses residuum, dissolved in water, with additive of cresol as stabilizing agent. See also:

CHEMICAL AGENT, MUSTARD, DISTILLED;
CHEMICAL AGENT, MUSTARD GAS.

CHEMICAL AGENT, NITROGEN MUSTARD GAS. (HN) Any one of a group of related compounds in which nitrogen is the central atom. Three compounds are recognized, identified by the three abbreviations HN-1, HN-2 and HN-3. Similar in physiological effects to mustard or distilled mustard, but greater tendency to permanent damage. The agents are of the type called 'blister gases.'

CHEMICAL AGENT, PHENYLDICHLOROARSINE. (PD) A delayed action casualty gas of low persistency. A liquid at normal temperatures, may be dispersed by explosive action or as a spray. Classed as a 'blister gas,' also acts as a 'vomiting gas.'

CHEMICAL AGENT, PHOSGENE. (CG) Delayed or immediate action casualty gas. Acts on the capillaries of the lungs to produce seepage of fluid, resulting in oxygen deficiency, and death, if lethal quantity is received. One of the 'choking gases.'

CHEMICAL AGENT, PLASTICIZED WHITE PHOSPHORUS. (PWP) Smoke producing agent, with side incendiary effects. Based on white phosphorus, with polymer addition to retard the burning.

CHEMICAL AGENT, Q. (Q) A chemical agent of specialized application.

CHEMICAL AGENT, RED SMOKE. A chemical agent, producing a red smoke, used for a variety of tactical purposes, such as identifying targets and friendly units, and for spotting purposes in ranging shots. Designated a 'signaling smoke.'

CHEMICAL AGENT, SULFUR TRIOXIDE-CHLOROSULFONIC ACID SOLUTION. (FS) A liquid which causes formation of a screening smoke when it is dispersed in air. May be dispersed by explosive effect or as a mechanically produced spray. A mixture of 55 percent sulfur trioxide and 45 percent chlorosulfonic acid. Smoke causes prickling of the skin and heavy concentration produces a severe irritation. In ordinary concentrations no protection is required.

CHEMICAL AGENT, T. (T) A chemical agent of specialized application.

CHEMICAL AGENT, THERMATE. (TH) Incendiary chemical agent, composed of mixture of thermite, additional oxidizer and binder, formerly used as igniter for magnesium bombs. The abbreviation 'TH' signifies either thermite or thermate, with specific compositions of thermate designated as TH2 and TH3. See also: **CHEMICAL AGENT, THERMITE.**

CHEMICAL AGENT, THERMITE. (TH) A metal incendiary, composed of approximately 73 percent ferric oxide and 27 percent fine granular aluminum. Used in items of ammunition to provide a source of heat to cause fires at the target. The abbreviation 'TH' signifies either thermite or thermate, with specific composition of thermite designated as TH1. See also: **CHEMICAL AGENT, THERMATE.**

chemical agent, thickener, incendiary oil. See: **THICKENER, INCENDIARY OIL.**

CHEMICAL AGENT, TITANIUM TETRACHLORIDE. (FM) A liquid which causes formation of a screening smoke when it is dispersed in air. May be dispersed by explosive effect or as a mechanically produced spray. Smoke is corrosive and irritating to nose and throat, but not serious in effect in the concentration usually present in a smoke cloud.

CHEMICAL AGENT, VIOLET SMOKE. A chemical agent, producing a violet smoke, used for a variety of tactical purposes, such as identifying targets and friendly units, and for spotting purposes in ranging shots. Designated a 'signaling smoke.'

CHEMICAL AGENT, W. (W) A chemical agent of specialized application.

CHEMICAL AGENT, WHITE PHOSPHORUS. (WP) Smoke producing agent, with side incendiary effects. A solid at normal temperature, dispersed by explosive effect of a burster charge.

CHEMICAL AGENT, YELLOW SMOKE. A chemical agent, producing a yellow smoke, used for a variety of tactical purposes, such as identifying targets and friendly units, and for spotting purposes in ranging shots. Designated a 'signaling smoke.'

chemical ammunition. Any ammunition, as bombs, projectiles, bullets, flares, or the like, containing a chemical agent or agents. Such agents include war gases, smokes, and incendiaries. See also: **chemical agent.** Cf: **chemical energy ammunition.**

chemical bomb. See: **bomb, chemical agent.**

Chemical Corps. (CC) Branch of the Army having primary responsibility for chemical warfare matters.

chemical energy ammunition. Ammunition intended to defeat armor and other resistant targets by chemical energy rather than kinetic energy as in conventional armor-piercing ammunition. Examples are HEAT and HEP ammunition. Cf: **chemical ammunition; kinetic energy ammunition.**

chemical grenade. See: **grenade, chemical.**

chemical land mine. See: **MINE, CHEMICAL AGENT.**

chemical mortar. A mortar (which see) designed to fire projectiles containing chemical agents. Term is now obsolete since all mortars may fire explosive types of projectiles as well as chemical types.

chemical spray. Aerial release, or device for aerial release, of liquid war gas for casualty effect, or of liquid smokes for aerial smoke screens.

chemical warfare. (CW) The tactics and technique of using chemical agents in offensive action, or of employing defensive measures against such actions.

Cherokee Ordnance Works. Ordnance Corps field installation, located at Danville, Pennsylvania.

CHEST, DECONTAMINATION KIT, GUIDED MISSILE. A container with a hinged top and carrying handles designed to store guided missile decontamination kit components. It may be compartmented and may accommodate a tray(s) or box(es).*

CHEST, PROPELLANT DRAINING KIT, GUIDED MISSILE. A container with a hinged top and carrying handles designed to store guided missile pro-

pellant draining kit components. It may be compartmented and may accommodate a tray(s) or box(es).*

chg (*abbr.*). 'Charge.'

Chicago Ordnance District. One of the eleven districts into which the United States is divided for purposes of industrial mobilization, procurement, contract negotiation, and administration, etc., by the Ordnance Corps. Embraces the States of North Dakota, South Dakota, Minnesota, Iowa, and Wisconsin; the upper peninsula of the State of Michigan; the counties of Hancock, McDonough, Fulton, Mason, Menard, Sangamon, Macon, Moultrie, Coles and Clark, and all counties north thereof in the State of Illinois; and the counties of Benton, White, Carroll, Cass, Miami, Wabash, Huntington, Wells, and Adams, and all counties north thereof in the State of Indiana. The main office is located in Chicago, Ill.

Chicago Ordnance Plant. Ordnance Corps ammunition plant, located at Chicago, Illinois.

chisel truck. See: **TRUCK, LIFT, FORK.**

chlorine. (Cl) Greenish-yellow toxic chemical, gaseous at normal temperatures and pressures, that is irritating and harmful to the eyes, nose, throat, and lungs, and may cause death.

chloropicrin. (PS) Trichloronitromethane, a chemical agent. A colorless liquid whose vapor is very irritating to the lungs, and causes vomiting, coughing, and crying. Has the odor of flypaper or licorice.

chock. A wedge, block, or piece of timber for fitting in a space or for preventing movement of an object.*

CHOCK, WHEEL. A chock for placing in front of, or behind, a wheel to prevent its movement.*

choke. A narrowing towards the muzzle in the bore of gun, hence *choked bore*. Term often applied to shotguns. Cf: **cylinder barrel.**

choke coil. A coil winding of small resistance and large inductance, used to impede or throttle a current.

choked bore. See: **choke.**

choke ring. Metal ring used in the reaction chambers of certain recoilless weapons to control gas escape. The same function is carried out by the throat rings, throat blocks and restricting plugs in other types of recoilless weapons.

choking. The condition which prevails in compressible fluid flow when the upper limit of mass flow is reached, or when the speed of sound is reached in a duct.

choking gas. Casualty gas which causes irritation and inflammation of the bronchial tubes and lungs. An example of this type of gas is CHEMICAL AGENT, PHOSGENE.

CHOPPER, ELECTRONIC. An electromechanical device designed for converting direct current into a modified square wave of the same frequency as, and bearing a definite phase relationship to, the driving sine wave of the applied alternating current.*

chord. *Specif.* An assumed straight line tangent to the lower surface of an airfoil section at two points, or a straight line between the leading and trailing edges of an airfoil section, or between the ends of

the mean line of an airfoil section; the distance between the leading and trailing edges of an airfoil section. See: *chord*, *mean aerodynamic*; *mean chord*.

chord direction. In stress analysis, the direction parallel to the intersection of the plane of the internal wing truss with the plane of symmetry of the aircraft. When a wing has two internal trusses in nonparallel planes, the plane bisecting the dihedral angle between these two planes should be used. See: *drag*; *lift direction*.

chord force or component. In stress analysis, a force, or component, in the chord direction.

chord length. The length of the projection of the airfoil on its chord.

chord, mean aerodynamic. The chord of an imaginary airfoil which would have force vectors throughout the flight range identical with those of the actual wing or wings.

chord, mean, of a wing. The quotient obtained by dividing the wing area by the span.

chromatic aberration. An aberration of a lens which causes different colors or wave lengths of light to be focused at different distances from the lens, resulting in colored fringes around the borders of objects seen through the lens.

chronograph. 1. *General.* An instrument for measuring time. 2. As applied to ballistics, an instrument for determining velocity by measuring the time required for a projectile to travel a known distance, thus furnishing the data for determination of the velocity. A complete chronograph usually consists of two main systems, one for detecting the projectile as it passes two (or more) points whose distance apart and distance from the muzzle are known accurately; and a second system for recording these passages on a time scale, thus supplying information that is readily converted into velocity. The velocity obtained in this manner is the *average velocity* between the recorded points. This is converted to *muzzle velocity* by adding to it the velocity lost, which is obtained from tables or charts which take into account the form factor (shape) of the projectile and the distance which it has traveled.

Special chronographs which do not consist of the two distinct systems covered above have been developed and are sometimes used for special situations. One such chronograph utilizes high speed photographs of the projectile taken at short, known intervals of time. The distance traversed by the projectile between exposures can be measured on the film and the velocity determined.

Some of the systems for detecting passage of the projectile are:

a. *Boulengé screen.* A flat frame on which is strung a continuous wire making vertical passes separated by small intervals. The ends of the wire are connected to, and are part of, the chronograph circuit. Passage of the projectile through two separated screens breaks the wire and interrupts an electrical circuit in each case.

b. *Aberdeen screen.* A flat frame on which two thin metal sheets are mounted so as to be insulated from

each other, and separated by a small distance. The projectile, in passing through the screens, provides a means for completing an electrical circuit in each case.

c. *Solenoid coil.* A coil wound on a round wooden frame large enough in diameter to permit passage of the projectile through its center. The projectile is premagnetized, so that passage of the projectile through two separated coils induces an electric impulse in the coil in each case.

d. *Photoelectric screen.* This is so designed that passage of a projectile alters the amount of light falling upon it and thus produces an electrical signal or impulse. Two of the types of photoelectric screens are as follows:

(1) *Sky screen.* Utilizes natural light and is adaptable to outdoor firings.

(2) *Lumiline screen.* Utilizes artificial light and is used principally in indoor ranges.

Some of the systems used for measuring the time intervals are:

a. *Boulengé chronograph.* This was the first reasonably accurate velocity measuring instrument. Since it is less accurate and slower in operation than the instruments described below, it is no longer used. Therefore only the principle will be covered. Passage of the projectile through the first screen breaks the circuit, disengaging an electromagnet and permitting a rod to fall. Passage through the second screen permits a second rod to fall. Provision is made by action of the second rod for recording on the first rod the distance through which it fell while the projectile was traveling between the screens. By treating the falling rod as a free falling body, the recorded distance can be converted to time.

b. *Aberdeen chronograph.* Consists of a motor turning a drum at a known constant speed. Mounted close to the drum, and in circuit with it and with the Aberdeen screens, are needle points. A specially prepared strip of paper is mounted on the inside of the drum, held in place by centrifugal force when the drum is turning. When the projectile completes the circuit between the two faces of each screen, a spark passes to the drum, perforating the paper. The distance between the two perforations can then be converted into velocity.

c. *Camera chronograph.* This was formerly called *solenoid chronograph* since it was used with the solenoid coil. It consists of a photographic oscillograph utilizing a rotating drum camera about 20" in diameter and a cathode-ray tube. Timing lines corresponding to .001 second intervals are spaced on the film. Any of the detection screens described can be connected to the cathode-ray tube and passage of the projectile then produces a change in voltage which will be recorded on the film. Distance between these occurrences can be read directly in time, and computed to velocity.

d. *Counter chronograph.* A device using an oscilator producing a frequency of 100,000 cycles per second and a neon light panel for counting and recording the number of cycles during the interval it takes a projectile to pass between two detecting de-

vices. Almost immediate results are obtained to a very high degree of accuracy. This method is well adapted to use with photoelectric screens, and can be made in portable units for use in the field.

e. *Machine gun chronograph.* This is essentially an *automatic counter chronograph* which permits recording time intervals of automatic cannon and machine gun fire. Readings are provided on electro-sensitive papers, thus providing a permanent record. The instrument operates in precisely the same manner as the counter chronograph, except that it can record the times, reset itself, and be ready for the next round at rates above 1800 rounds per minute. In addition to recording velocities of each round fired, the instrument records rate of fire.

f. *Field chronograph.* A wholly self-contained detection and measuring device for field use. One type only will be described. This type uses a wave of known frequency which is transmitted along the trajectory from a point in back of the gun. The wave reflected from the moving projectile causes a Doppler effect. The resulting electronic phenomena are transmitted to an oscilloscope, giving data from which the projectile velocity can be computed.

CHRONOMETER. An instrument for precisely determining time, manufactured to close tolerances to assure the time-keeping qualities of dependability and consistency of rate. These qualities are accurately ascertained by comparison with more exact devices or by astronomical methods so that the accumulated error may be taken into account when determining time. Its usual uses are to indicate time for navigational purposes, and to serve as a reference for less accurate timepieces. It is usually provided with a winding indicator dial and is usually mounted in gimbals to maintain the instrument in a level position. May consist of a spring driven or other type of movement which is capable of exacting performance without regulation throughout the normal range of room temperatures. Not designed for carrying on the person.*

chuffing. An uneven or nonuniform burning of solid propellant, as in a rocket motor. Cf: **chugging.**

chugging. An irregular combustion of liquid fuels in a rocket engine, due to incorrect mixture or poor chamber design. Cf: **chuffing.**

chute. 1. Short for 'parachute.' 2. Any passage or slide through which objects are directed, as a **case ejection chute**, **feed chute**, or **link ejection chute** (which see under separate entries).

CHUTE, AMMUNITION. A chute through which ammunition is supplied to the gun or cannon preparatory to firing.*

CHUTE, EJECTION. A chute through which the link or case is expelled from the gun or cannon.*

CIA (abbr). 'Central Intelligence Agency.'

CIC (abbr). 1. 'Combat Information Center.' 2. 'Counter Intelligence Corps.'

cigarette burning. In rocket propellants, black powder, gasless delay elements, and pyrotechnic candles, the type of burning induced in a solid grain by permitting

burning on one end only, so that the burning progresses in the direction of the longitudinal axis.

Cincinnati Ordnance District. One of the eleven districts into which the United States is divided for purposes of industrial mobilization, procurement, contract negotiation and administration, etc., by the Ordnance Corps. Embraces the State of Kentucky; the counties of Warren, Tippecanoe, Clinton, Howard, Grant, Blackford, and Jay, and all counties south thereof in the State of Indiana; and the counties of Darke, Miami, Clark, Greene, Fayette, Pickaway, Hocking, Morgan, Noble, Perry, and Monroe, and all counties south thereof in the State of Ohio; and the State of Tennessee, including the city of Bristol, Virginia-Tennessee. The main office is located in Cincinnati, Ohio.

cir (abbr). 'Circular.'

circle of confusion. The circular image of a distant point object as formed in a focal plane by a lens.

circle of least confusion. *Optics.* A focal plane between the two focal points of a lens affected by astigmatism where the most clearly defined image can be obtained.

circular error. 1. A bombing error measured by the radial distance of a point of bomb impact, or mean point of impact, from the center of the target, excluding gross errors. 2. With an airburst atomic bomb, the bombing error measured from the point on the ground immediately below the bomb burst to the desired ground zero. See: **ground zero.**

circular error average. The bombing error in a given bombing attack, expressed as the average radial distance of the bomb impacts, or mean points of impact, from the center of the target.

circular probable error. (CEP) 1. The probable bombing error expressed in terms of the radius of a circle centered on the desired mean point of impact (DMPI) of a bombfall and containing half of the expected bombfall, excluding gross errors; also sometimes applied to the actual bombing error. 2. With an airburst atomic bomb, the probable bombing error expressed in terms of the radius of a circle centered upon the desired ground zero (DGZ) the radius from that point being projected horizontally to the point below the bomb burst. Gross errors are also excluded in atomic bombing. 3. With reference to guided missiles, a probable error expressed in terms of the radius of a circle within which one-half of a given number of missiles can be expected to fall. Gross errors are usually excluded. See: **CEP (abbr).**

circular scan. A radar scan in which a given point on the directed beam describes a circle in space with the antenna at the center. Hence, *circular scanning.* See: **scan.**

circular system. A system for controlling guided missiles.

The missile automatically sends out a signal to two radio stations, and times the echoes to keep itself on course.

circumferential stress. See: **stress, circumferential.**

civ (abbr). 'Civil; civilian.'

CK (*abbr.*). Chemical agent, 'cyanogen chloride' (war gas).

Cl (*abbr.*). 'Chlorine.'

clamping circuit. *Electricity.* 1. A circuit that maintains either of the amplitude extremes of a wave form at a certain level of potential. 2. A circuit that clamps the base of a wave form to a given potential or current value.

class B status materiel. Fixed armament, fortifications, casemates, fire control, and surveillance equipment, power plants, and artillery materiel which remain in storage in their tactical location. Class 'B' status materiel is periodically operated and inspected for combat serviceability.

classification. 1. Placing of military documents, etc., in special groups for safeguarding defense information. The classifications, based on degree of restriction required, are TOP SECRET, SECRET, and CONFIDENTIAL. See: defense information. 2. Assignment of status to military materiel by classifying as standard, substitute standard, limited standard, obsolete, etc. See: type classification.

classification of defects. In the inspection of Ordnance materiel, the enumeration of possible defects of an item, classified in accordance with the importance of the effect of each defect. The customary classifications, and their definitions, are:

Critical defect. One that could result in hazardous conditions, or prevent performance of the tactical function.

Major defect. One that could result in failure, or materially reduce the usability, of the item.

Minor defect. One that will not materially reduce the usability of the item.

classified. *Specif.* Of documents, lectures, information, equipment, films, and the like: Having a security classification. See: defense information.

classified matter. See: defense information.

classified military information. See: defense information.

CLEANER, VACUUM, SELF-PROPELLED. A machine consisting essentially of a power driven fan, pick-up nozzle and hopper(s), mounted on a modified truck chassis. The fan creates a vacuum which draws debris through the pick-up nozzle and deposits into the hopper. It is designed specifically for removing all loose debris, such as dirt, stones, small metal pieces and the like from runways, taxiways, roads and other paved surfaces.*

cleaning brush. *Specif.* Metal brush on a rod or pulled by a cord, used to clean the rifling of a gun barrel.

cleaning gun. A mechanical hand-operated device using the ejector principle to throw a spray of cleaning solvent mixed with air or steam on engines, chassis, machinery, or other equipment and parts to remove surface deposits of grease and/or foreign matter.*

cleaning rod. Rod to be used with a brush or cloth, or other attachment, for cleaning the bore of a firearm.

clear. 1. To give a person a security clearance. 2. a. To operate a gun so as to unload it or make certain no ammunition remains. b. To free a gun of stoppages. 3. To clear an engine, to open the throttle of an idling engine to free it from carbon. 4. *Electronic computers.* To restore a storage or memory device to prescribed state, usually that denoting zero.

clearance. 1. Space allowed between moving parts of guns and machinery. 2. Elevation of a gun at such an angle that a projectile will not strike an obstacle between the muzzle and the target. 3. Authority permitting individuals, cooperating in Department of Defense work and having a legitimate interest therein, access to classified information, materiel or equipment or admission to restricted areas or installations where such information or materiel is located. (Security clearance.)

clearance, angle of. See: angle of clearance.

clearance fit. See: fit.

clearing block. Wooden block placed between the bolt and the rear of the barrel of an automatic weapon to prevent closing of the action and to show that the gun is unloaded.

Cleveland Ordnance District. One of the eleven districts into which the United States is divided for purposes of industrial mobilization, procurement, contract negotiation and administration, etc., by the Ordnance Corps. Embraces the counties of Erie, Mercer, and Crawford in the State of Pennsylvania; and the counties of Mercer, Auglaize, Shelby, Champaign, Madison, Franklin, Fairfield, Licking, Muskingum, Guernsey, Harrison, Carroll and Columbiana, and all counties north thereof in the State of Ohio. The main office is located in Cleveland, Ohio.

Cleveland Ordnance Plant. Ordnance Corps field installation, formerly called 'Cleveland Tank Plant,' located at Cleveland, Ohio.

climatic test. A test to determine the efficiency of personnel or materiel under any given set of actual or simulated climatic conditions.

clinometer. An instrument for measuring an angle of elevation, as that between a gun bore and the horizontal; accurately graduated and calibrated for use in boresighting. See also: quadrant.

clinometer rest. Device placed in the bore of a gun to support a clinometer; bore rest.

clip. See: CLIP, CARTRIDGE.

clip, ammunition. See: CLIP, CARTRIDGE.

CLIP, CARTRIDGE. A metal device intended to contain rifle or revolver cartridges for ease of loading into the receiver of a rifle or cylinder of a revolver.

clip loading machine. Device for placing cartridges in clips.

clipping circuit. *Electronics.* A pulse-shaping network which removes that part of a wave form which tends to extend above (or below) a chosen voltage level.

clip, plug, retaining. A spring clip designed to retain the male terminal of CABLE ASSEMBLY, POWER, ELECTRICAL, in bomb fuze well.

CLIP, SAFETY, ARMING WIRE. A spring clip designed to pass over an arming wire and tightly grip the wire to act as security for the free end of the arming wire, to prevent premature arming of a bomb fuze.

CLOCK, DELAY, UNDERWATER MINE. A safety device designed to delay the arming of an underwater mine. Its purpose is to allow the planting craft time to withdraw from the mine field.*

close control radar. Specially modified precision-type ground radar net which is used for the purpose of close positioning of aircraft over a target normally difficult to locate or invisible to the pilot.

closed bomb. A test device used for the evaluation of the thermochemical characteristics of combustible materials. Also called 'closed chamber.' The closed bomb is a thick-walled, alloy steel cylinder with removable threaded plug in each end. One plug contains the ignition system, and the other plug is instrumented to permit recording of pressure-time. The bomb is cooled by a water jacket. The closed bomb is used for determining the interior ballistic properties of propellants, such as the linear burning rate, relative quickness and relative force, under varying conditions of pressure and temperature.

closed chamber. See: closed bomb.

closed pit test. A test conducted on high explosive loaded projectiles and bombs with charges not exceeding 200 pounds, to determine the number and weight distribution of the fragments resulting from the functioning of the charge. The loaded item is detonated while buried in sand, and the sand is then sifted to recover the fragments. The test is now recognized as being somewhat unreliable because of loss of the smaller fragments, and secondary break-up of fragments by the effect of the surrounding sand. Other methods of determining fragmentation characteristics are now employed.

cloth, cartridge. Special fabric used to hold the propelling charge for large guns. Must not leave burning residue when gun is fired. Formerly silk was used exclusively for this purpose but other satisfactory fabrics have been developed. Used in making propellant bags. See also: bag, propellant.

CLOTH, LENS. A plain, balanced woven material having a high sley. It is chemically treated to aid in the removal of grease, soil, and grit from optical lenses, glass equipment, or other finely polished surfaces, without causing injury to them.*

cloud attack. Attack made by means of a toxic gas, or aerosol cloud for harassing and/or casualty effect.

cloud switch. Electrical switch in an antiaircraft artillery fire control data system used to facilitate changing from visual to radar fire control or vice versa.

clstr (abbr). 'Cluster.'

cluster. (clstr) 1. A collection of small bombs held together by an adapter for dropping. Example: CLUSTER, FRAGMENTATION BOMB. 2. A pyrotechnic signal consisting of a group of stars or fireballs. Example: amber star, cluster. 3. A group-

ing of rocket motors fastened together. Example: CLUSTER, ROCKET MOTOR. 4. A group of three antipersonnel mines.

cluster adapter. See: ADAPTER, CLUSTER, BOMB; ADAPTER, CLUSTER, ROCKET.

cluster, aimable. A cluster of bombs held together so as to be aimed and dropped by ordinary bombing methods. See also: adapter, cluster, aimable.

CLUSTER, FRAGMENTATION BOMB. A cluster of fragmentation bombs, so arranged that more than one bomb can be suspended and dropped from a single station of a bomb rack on an airplane.* Popularly called 'frag cluster.'

CLUSTER, GAS BOMB. A cluster of gas bombs, so arranged that more than one bomb can be suspended and dropped from a single station of a bomb rack on an airplane.

CLUSTER, INCENDIARY BOMB. A cluster of incendiary bombs, so arranged that more than one bomb can be suspended and dropped from a single station of a bomb rack of an airplane.

CLUSTER, ROCKET MOTOR. A grouping of rocket motors fastened together.

clutch. A mechanical device which facilitates engaging or disengaging of two shafts or rotating members by the employment of positive, magnetic, or friction type connections. It is controlled either by manually-operated lever(s) or foot-operated pedal(s) or by automatic means.*

CLUTCH, FRICTION. A clutch which transmits motion or power from the driving to the driven member by the frictional resistance between the engaging surfaces.*

CLUTCH HALF, FRICTION. That portion of a CLUTCH, FRICTION which transmits or receives motion or power by engagement with the mating member.*

CLUTCH, MAGNETIC. A clutch which transmits motion or power from the driving or field member to the driven or armature member, and whose friction surfaces are drawn and held together by magnetic attraction when electric current is applied.*

CLUTCH, POSITIVE. A clutch which transmits motion or power from the driving to the driven member by the engagement of interlocking projections and/or recesses or projections in the other member.*

CLUTCH, SLIDING SLEEVE. An internally splined metallic clutch, operating on a splined shaft, designed to transmit motion or power to an abutting shaft by means of engaging the external splines on the driven shaft. Usually manually operated.*

clutter. See: radar clutter.

cmbt (abbr). 'Combat.'

cml (abbr). 'Chemical.'

CmlC (abbr). 'Chemical Corps.'

CMP (abbr). 'Computed maximum pressure.'

CN (abbr). Chemical agent, 'chloroacetophenone' (tear gas).

CNB (*abbr.*). Chemical agent, 'chloroacetophenone-benzene' (tear gas solution).

CNC (*abbr.*). Chemical agent, 'chloroacetophenone-chloroform' (tear gas solution).

CNS (*abbr.*). Chemical agent, 'chloroacetophenone-chloropicrin-chloroform' (tear gas solution).

CN solutions. Tear gas fillings for munitions. See also: **CHEMICAL AGENT, CHLOROACETOPHENONE SOLUTION.**

cnstr (*abbr.*). 'Canister.'

cntr (*abbr.*). 'Container.'

CO (*abbr.*). 'Commanding Officer.'

coal powder. An unglazed finely granulated black powder made with coal in lieu of charcoal, relatively slow burning, used normally blended with meal powder to attain a desired burning time.

coal tar. One of the products obtained during the destructive distillation of bituminous coal. By further distillation and by chemical processes, it can be separated into numerous compounds. Many are used in the manufacture of explosives: benzene, toluene, phenol, aniline.

coarse setting. Preliminary adjustment of a sight in laying a gun. A coarse setting is made first on the main scale; then the fine setting is made on the associated scale of smaller graduations.

coarse sight. Adjustment of the sight of a gun so that a part of the front sight is seen through the notch in the rear sight. Cf: **fine sight.**

coated optica. Optical lenses, prisms, etc., the surfaces of which have been treated to cut down surface reflection of light, thus resulting in greater optical efficiency.

COATING COMPOUND, BULLET TIP. A pigment(s) dispersed in a vehicle composed of wax, thinner(s) and/or solvents. Used for coating the tips of projectiles of small arms ammunition for scoring purposes during target practice.*

coaxial antenna. An antenna comprised of a quarter wavelength extension to the inner conductor of a coaxial line and a radiating sleeve which in effect is formed by folding back the outer conductor of the coaxial line for approximately one-quarter wavelength.

coaxial line. A cable having concentric conductors. Used as a transmission line for audio, radio, and television signals.

coaxial machine gun. Machine gun mounted in the turret of a tank in such a way that its line of fire is exactly parallel to that of the cannon set on the same mounting.

cobalt bomb. See: **bomb, cobalt.**

cock. 1. To draw back the hammer, bolt or plunger of a firearm to make ready for firing. 2. To set a bomb-release mechanism so as to make ready to drop the bomb or bombs.

cocking lever. A lever for drawing back (sometimes also for lowering) the striker or hammer of an automatic firearm.

code. *Electronic computers.* A system of symbols and their use in representing rules for handling the flow or processing of information; to actually prepare problems for solution on a specific computer.

code, instruction. *Electronic computers.* An artificial language for describing or expressing the instruction which can be carried out by a digital computer. In automatically sequenced computers, the instruction code is used when describing or expressing sequences of instructions, and each instruction word usually contains a part specifying the operation to be performed and one or more addresses which identify a particular location in storage. Sometimes an address part of an instruction is not intended to specify a location in storage but is used for some other purpose.

If more than one address is used, the code is called a multiple-address code.

coders. An electronic device in a radar beacon or in an interrogator or interrogator-responder for coding pulsed signals.

coefficient of form. See: **form factor.**

coefficients, performance. As pertains to cartridge actuated devices, indexes of performance defined as change of thrust, velocity or acceleration with respect to temperature over the range, -65°F to 160°F . See also: **cartridge actuated device.**

CofOrd (*abbr.*). 'Chief of Ordnance.'

COIL, UNDERWATER MINE. An item designed to detect changes in an underwater mine's magnetic field made by the passing of a ship.*

coincidence. *Optics.* Agreeing as to position; corresponding. In a coincidence-type range finder, when the two half-images of a distant object are aligned, they are said to be 'in coincidence.'

coincidence adjustment. Range adjustment in a coincidence range finder.

coincidence prism. A compound prism, consisting of a system of small prisms cemented together, used in a coincidence range finder to bring the images from the two objectives to a single eyepiece for viewing.

coincidence range finder. Optical instrument for determining distances. By adjustment, separate images seen through the two eyepieces can be made to coincide. A reading of the adjustment gives the distance.

coke-bottle shape. A popular name given to the shape of certain aircraft with an indented fuselage designed after the area-rule concept.

cold extrusion. A method of forming metal in which high pressure is employed to force metal through a die opening. Recent developments have extended this application to include steels as well as the softer metals. The forming may be done around a punch, in which case hollow forms, such as tubing, cartridge cases, or projectile bodies, may be produced.

cold forming. Synonym for **cold extrusion** (which see) as applied to projectile manufacture.

cold pressing. Synonym for **cold extrusion** (which see) as applied to projectile manufacture.

cold room. Special room in which equipment is cooled to prescribed low temperatures for testing.

cold-worked. Of metals: Worked to form without heating.

cold-worked case. Steel cartridge case produced by method of cold working. This produces high physical properties.

cold-worked gun. Gun produced by cold working, that is, by radial expansion (which see).

cold working. 1. The forging or working of a material without applying heat. When performed on metals such as steel, the physical properties may be considerably altered. 2. *Specif.* A method of gun manufacture by radial expansion, which see.

collective fire. Combined fire of various small arms concentrated on a given target or area.

collective lens. A convex or positive lens used in an optical system to collect the field rays and bend them to the next optical element. It prevents the loss of light. Sometimes used to denote a convergent or convex lens.

collimate. 1. Bring into line; make parallel. 2. Adjust accurately the line of sight of a surveying instrument, telescope, or camera. 3. Adjust the sight of a gun so that it is parallel to the axis of the gun barrel. 4. Adjust the optical axis of an optical sight or the electrical axis of a radar beam to make the axes parallel.

collimating sight. Sight equipped with a collimator. The collimating sight is set parallel with the axis of the bore of the gun in horizontal direction, but adjustable in elevation, so that it can be kept focused on an aiming point while the gun is raised or lowered.

collimator. Optical device used to align the sights of a gun with the vertical plane through the axis of the bore. It can be moved in elevation independently of the gun, so that it can be kept sighted on an aiming point.

color code. A system of ammunition identification by color, wherein each item of ammunition is painted with a color or combination of colors in accordance with a code to make for ready identification, particularly when out of its original container.

colored marker projectile. See: projectile, colored marker.

colored smoke. Gaseous products of a distinctive color. Smokes are a class of chemical agent (which see). The basis for a colored smoke is a volatile dye, which upon condensing forms a colored cloud. The dye may be volatilized by explosion of a burster charge, as in a colored marker projectile or by combustion of a fuel mixed with the dye, as in a colored smoke candle. Colored smoke munitions are made in several forms, including projectiles, bombs, grenades and candles. They may be employed as signals, target markers, zone identification markers, etc. Some of the most satisfactory smoke colors are red, green, yellow and violet.

column. *Electronic computers.* One of the character or digit positions in a positional notation representa-

tion of a unit of information; columns are usually numbered from right to left column, zero being the right-most column if there is no point, or the column immediately to the left of the point if there is one; a position or place in a number in which the position designates the power of the base and the digit is the coefficient, e.g., in 3876, the 8 is the coefficient of 10³, the position of the 8 designating the 2.

com (*abbr.*). 'Common.'

coma. *Optics.* An aberration of a lens which causes oblique pencils of light from an object point to be imaged as a comet-shaped blur instead of a point. This aberration is caused by unequal refraction through the different parts of the lens.

combat analysis. A theoretical analysis conducted to determine the probable effectiveness of an existing or projected weapons system under combat conditions.

combatant. 1. *International law.* Individual member of a belligerent force subject to the laws, rights, and duties of war. 2. Soldier or unit assigned to duty as an active fighter or fighting unit, as distinguished from duty in any of the services, such as administrative, supply or medical.

COMBAT ENGINEER VEHICLE, FULL TRACKED.

A self-propelled armored vehicle, utilizing a combat tank chassis, designed to accomplish essential pioneer tasks within combat areas. Includes a demolition gun in a revolving turret and attachments, such as winch(es), boom(s), bulldozer, and A-frame. It may have provisions for special attachments, such as mine exploder, mine detector, or mine laying devices. Excludes TANK, COMBAT, FULL TRACKED.*

combat serviceable item. An item of equipment which is complete, ready to perform immediately at its rated capacity, and will remain serviceable under severe operating conditions for a reasonable length of time.

combat tire. Pneumatic tire of heavy construction which is designed to operate without air pressure for a limited distance in an emergency.

combat vehicle. (cveh) A land or amphibious vehicle, with or without armor or armament, designed for specific functions in combat or battle.

The installation of armor or armament on vehicles other than combat vehicles does not change their original classification.

combat zone. (CZ) 1. *Specif.* A region in a theater of operations where fighting takes place, or where space is designated for the operations of friendly combat forces, extending from the front line to a line or boundary designated by the theater commander. 2. A combat area. *Popular.*

In sense 1, the size of a combat zone depends upon the size of the forces assigned, the nature of the operations contemplated, the character of the lines of communication, terrain features, and enemy capabilities.

combination fuze. See: fuze, combination.

combination microphone. A microphone consisting of a combination of two or more dissimilar microphones. Examples of combination microphones are: two

oppositely-phased pressure microphones acting as a gradient microphone, and a pressure microphone and a velocity microphone acting as a unidirectional microphone.

combination vehicle. Towing vehicle (prime mover) and a towed load (trailer).

combined engineer user test. A test performed jointly by the interested technical service and the user on test items or systems. It is applicable to situations which involve expenditures of expensive, critical material, or where there is but one item of equipment available, only one site on which the equipment may be tested, or but one facility suitable for conducting the test.

combustion. The continuous rapid combination of a substance with various elements such as oxygen or chlorine or with various oxygen bearing compounds, accompanied by the generation of light and heat.

combustion chamber. 1. A chamber or cylinder-like assembly in a rocket engine, jet engine, or the like where the propellant is burned. Also called a 'blast chamber,' 'burner,' or 'firing chamber.' 2. The space between a piston and the cylinder head of a reciprocating engine at the end of the compression stroke.

combustion starter. A cartridge starter.

combustor. A name generally assigned to the combination of flame holder, igniter, combustion chamber, and injection system of a ramjet.

comd (abbr). 'Command.'

command. (comd) 1. Control exercised over an airborne guided missile or other pilotless air vehicle through transmission of electronic signals. 2. *Electronic computers.* A pulse, signal, or set of signals initiating one step in the performance of a computer operation. See: *instruction and order.* 3. To govern the movements and reactions of an airborne guided missile or other pilotless air vehicle by electronic signals.

command control. See: *command guidance.*

command fuze. See: *fuze, command.*

command guidance. A type of electronic guidance of guided missiles or other guided aircraft wherein signals or pulses sent out by an operator cause the guided object to fly a directed path. Also called 'command control.'

The signals sent may be based on information derived from telemetering, ground-based radar, visual reference, etc. See: *command-guided missile.*

command-guided missile. A missile guided by a system that requires two radars, one to watch the target, the other to track the missile.

A computer combines the data from each radar to give the missile flight directions.

commercial-type vehicle. A motor vehicle designed to meet civilian requirements and used by the Army, without major modification, for routine purposes in connection with the transportation of supplies, personnel and equipment.

committed. Term descriptive of the condition of a fuze when the arming process has reached the point from

which arming will continue to completion in spite of the absence of any arming forces.

common hardware. *Maintenance and supply.* Expendable hardware items having multiple applications (e.g., nuts, bolts, screws, washers, pins, keys, grommets).

common item. Piece of equipment or materiel of supply which is used or procured by more than one technical service.

common parts. Manufactured parts which may be used commonly on two or more major items.

common projectile. See: *projectile, common.*

common supplies. Those supplies common to two or more services.

common tools. Items of tools and tool equipment which are found in common usage, or which are applicable to a variety of operations or to a single operation on a variety of materiel. Screwdrivers, hammers, drill presses, lathes, welding equipment, battery chargers are examples of common tools.

communications zone. Rear part of theater of operations (behind but contiguous to the combat zone) which contains the lines of communications, establishments for supply and evacuation, and other agencies required for the immediate support and maintenance of the field forces.

comp (abbr). 'Composition.'

COMP A-3 (abbr). 'Composition A-3' (explosive).

company. Basic administrative and tactical unit in most arms and services of the Army. A company is on a command level below a battalion and above a platoon and is equivalent to a battery of artillery, etc.

COMPARATOR, OPTICAL PROJECTION. An instrument designed to inspect or measure, by optical projection, the wear, tolerance or distortion of an item which is difficult or impossible to inspect or measure directly.*

COMPARATOR, VISCOSITY, OIL. An instrument that indicates by direct reading the viscosity of a sample of oil in Saybolt Seconds. The unit operates by a comparison factor with a sealed-in oil of known viscosity.*

compass azimuth. Angle measured clockwise from a north point determined by means of a compass reading. Because of variations of the compass, it may not agree with an azimuth measured from true magnetic north.

compass bearing. Direction or bearing as given by a compass reading.

compass compensation. Method of adjusting a compass to compensate for the magnetic forces exerted by nearby metals, parts of an aircraft or a ship's structure, etc.

compass course. Course of an aircraft, tank, person, etc., as indicated by the horizontal angle between the north-south line, as shown by a compass, and the direction of motion of the aircraft, tank, person, etc.

compass error. 1. False compass needle reading induced by deflection because of nearby metallic ob-

jects, static electricity, or improper adjustment of the compass. 2. The total difference between the reading of north on the compass and true north.

compass heading. A heading measured relative to compass north.

compass, magnetic. An instrument utilizing a magnetic needle or indicator and a graduated dial or card to determine direction in relation to the magnetic poles.*

compass north. The direction indicated by the needle or other sensing element of a magnetic compass.

Compass north and magnetic north differ in that the former may be determined by other influences than the earth's magnetic field.

compatibility. In connection with ammunition, refers almost exclusively to chemical compatibility; that is, the ability of a given material to exist unchanged under certain conditions of temperature and moisture, when in the presence of some other material. If this condition exists, the two materials are said to be compatible. Thus black powder is compatible with zinc plated steel, but is incompatible with bare brass. Incompatibility may result in loss of effectiveness or in extreme hazard. The term is also sometimes used in its general sense; as, for instance, a given propellant is compatible with a given projectile, if the ballistic results on firing are favorable.

COMP B (abbr). 'Composition B' (explosive).

COMP C-4 (abbr). 'Composition C-4' (explosive).

compensator. Any device used to offset or allow for undesirable forces or motions.

For example, on some small arms, a type of compensator may be used to hold down muzzle rise and reduce recoil; on a direction finder, a compensator is that part which automatically compensates for deviation in the direction indicator.

COMPENSATOR, DEPTH, UNDERWATER MINE.

A hydrostatically actuated item designed to increase the sensitivity of a firing mechanism when an underwater mine exceeds a predetermined depth.*

complementary angle of site. An angle of site correction to compensate for the error made in assuming rigidity of the trajectory.

complete carry. See: carry.

complete penetration. 1. In the Army, penetration obtained when the projectile in the target or light through the target can be seen from the rear of the target. 2. In the Navy, penetration obtained when the projectile passes through the target intact or a major portion of the projectile passes through.

complete round. All of the components of ammunition necessary to fire a given gun or firearm once; also applied to all the components of other items of ammunition, such as aerial bombs, rockets, etc. See also: bomb complete round.

complete round acceptance test. For each lot of ammunition this is the final check on the proper assembly of the round and determination of its ability to function satisfactorily under service conditions. a. *Velocity phase:* Provides a check on the powder charge as loaded, with service components, by meas-

uring the muzzle velocity developed and determining the uniformity thereof. The powder lot is the controlling factor. b. *Safety phase:* Stresses the round more than could be reasonably expected in service, so as to bring to light defects which might, under service conditions, produce malfunctioning (including prematures). Here, the shell lot and fuze lot are the controlling factors. c. *Functioning phase:* Tests the ability of the round as issued to function satisfactorily within prescribed tolerances and to ascertain the limit of probable malfunctions. In this test the fuze lot is the controlling factor.

component. 1. Essential part of a whole, such as a trigger in a firing mechanism or a generator in a radio set. 2. Subassemblies or parts, which together with other subassemblies, parts or end items, when assembled, become an item of issue. 3. *Maintenance and supply.* A group of connected assemblies and parts which is capable of operation independently but may be externally controlled or derive its power from another source (computer, engine, transmission, electrical generator).

component, time-change. *Maintenance and supply.* A component which because of design limitations or safety is removed from an end item for rebuild or overhaul after a specified period of operation (e.g., an aircraft component).

composite defense. In antiaircraft artillery, a defense that employs two or more types of fire units which are integrated into a single defense.

composite rigid projectile. See: projectile, composite rigid.

composition. (comp) Specifically: an explosive material that may be cast or molded. In this sense the word 'composition' is found followed by a letter, or by a letter and a numeral, designating the kind of explosive. Some of the more important compositions, with ingredients and approximate percentages, are as follows:

Composition A-3: RDX/wax, 91/9

Composition B: RDX/TNT/wax, 59.5/39.5/1.0

Composition B-2: RDX/TNT, 60/40

Composition B-3: RDX/TNT, 60/40; the RDX is of controlled granulation.

Composition C-4: RDX/Polyisobutylene binder, 91/9.

compound engine. A reciprocating engine utilizing its exhaust gas to rotate a turbine.

Power developed by the turbine may be conveyed back to the engine shaft, or utilized to drive accessories.

compound lens. A lens composed of two or more separate pieces of glass. These component pieces or elements may or may not be cemented together. A common form of compound lens is a two-element objective, one element being a converging lens of crown glass and the other being a diverging lens of flint glass. The surfaces of the two elements are ground to eliminate aberrations which would be present in a single lens.

compound stress. A combination of two or more stresses.

- compressibility, modulus of.** The fractional change in volume per unit change of pressure.
- compression-ignition engine.** A type of reciprocating engine using a fuel which is sprayed into the cylinder and ignited by heat resulting from the compression of the air charge in the cylinder. See also: **ENGINE, DIESEL.**
- compression-pressure ratio.** *Auto.* The ratio of the final pressure reached during compression divided by the pressure at the beginning of compression. Absolute pressures are used.
- compression ratio.** See: **compression-volume ratio.**
- compression rib.** An airfoil rib especially constructed to take the force of compression.
- compression-volume ratio.** *Auto.* The sum of the volume of the piston displacement and the clearance volume between the piston head when on top dead center and the cylinder head, divided by the clearance volume between the piston head when the piston is at top dead center and the cylinder head. The normal use of the term *compression ratio* is based on this relationship.
- compression wave.** *Aerodynamics.* A shock wave having the effect of increasing the density of air as the wave passes through it.
A compression wave is distinguished from an expansion wave.
- COMPRESSOR, PISTON RING.** A hand held, hand operated device designed to compress one or more piston rings into piston grooves for installation into a cylinder.*
- computed maximum pressure.** (CMP) See: **pressures, gun.**
- computer.** A machine designed to determine the answer to a specific mathematical problem. Excludes **CALCULATING MACHINE**.*
- computer, analog.** A computing machine that works on the principle of measuring, as distinguished from counting, in which the measurements obtained, as voltages, resistances, etc., are translated into desired data. Cf: **computer, digital.**
Analog computers range from the relatively simple devices of the slide rule and airspeed indicator to complicated electrical machines used for solving mathematical problems. Radar and gun director lean heavily upon this type of computer. See: **differential analyzer.**
- COMPUTER, BALLISTICS.** A computer which utilizes a power driven mechanism and/or electronic or electrical circuits to calculate the trajectory of a projectile in relation to a target.*
- computer, digital.** A computer that works on the principle of counting, as distinguished from measuring. Cf: **computer, analog.**
Digital computers make up a family of computers, ranging from the abacus to the business-office adding machine, to electrical relay computers as used in telephone exchanges, to the complex electronic calculators, such as **Eniac** (which see). Electronic computers use either a decimal or binary system of notations.
- COMPUTER, ELEVATION.** A computer which utilizes a power driven mechanism and/or electronic or electrical circuits to calculate vertical angular measurements from a reference level. May include accessories.*
- COMPUTER, ERROR, RADAR DATA.** A computer which utilizes a power driven mechanism and/or electronic or electrical circuits to make error calculations by means of information derived from radar equipment. May include accessories.*
- COMPUTER, GRIVATION.** A computer for the determination of the angle between grid north and magnetic north as a function of longitude convergency in the terrestrial polar regions.*
- COMPUTER GROUP, BALLISTICS DATA.** A collection of items, two or more being major electronic components, which is not capable of performing a complete operational function by itself, but which when added to a set provides ballistics data computing functions.*
- COMPUTER GROUP, GUIDED MISSILE.** A group specifically designed to compute intelligence data received from a guided missile for azimuth, elevation, range correction and motor shutoff commands. Contains a test system and signal simulator for testing the computing units. Excludes **COMPUTER GROUP, BALLISTICS DATA.** See also: **COMPUTER-TRACKING GROUP, RADAR**.*
- COMPUTER, GUN DIRECTION.** A computer which utilizes a power-driven mechanism and/or electronic or electrical circuits to compute gun-laying problems based on geometric, ballistic, and meteorological data. It calculates azimuth and elevation angles and fuze settings. Excludes **COMPUTER, BALLISTICS**.*
- COMPUTER, HORIZONTAL DISTANCE.** A computer consisting of a base, a rotating disk, and an index arm. It is specifically designed for meteorological use to determine the horizontal distance from an observation point when the height of the object is known.*
- COMPUTER, MAGNETIC VARIATION.** A computer which provides automatic computation of magnetic variation.*
- COMPUTER, METEOROLOGICAL DATA.** A computer which utilizes a power driven mechanism and/or electronic or electrical circuits to mathematically process received information to determine meteorological data. May include a recorder.*
- COMPUTER, POSITION, BOMB DROPPING.** A computer which permits the accomplishment of precision bombing without the aid of visibility.*
- COMPUTER, RANGE.** A computer for the determination of the range between two or more points.*
- COMPUTER SET, BALLISTICS.** A complete set for the determination of the trajectory of a projectile in relation to a target, and for the solution of fire control problems.*
- COMPUTER, TIME INTERVAL RATIO.** A computer for determining the ratio between two or more time intervals.*

COMPUTER, TRACK. An item used to determine the actual path of an aircraft relative to the earth's surface.*

COMPUTER-TRACKING GROUP, RADAR. A collection of items, two or more being major electronic components, which is not capable of performing a complete operational function by itself but which when added to one or more sets or used as part of a set or sets, will provide radar computing and tracking facilities.*

COMPUTER, ZONE WIND. A computer which utilizes a power-driven mechanism or electrical circuits in order to compute two or more wind features such as direction and velocity within various altitude zone levels. The thickness of each zone level is selected at the option of the operator and is determined by the tactical application of the computed data. May include accessories.*

computing gunsight. A gunsight, esp. one for aircraft machine guns, that automatically calculates for wind, range, and other variables, and enables a gunner to hit his target.

Some types of computing gunsights may be used also for rocket-firing and bombing. See: **gun-bomb-rocket sight.**

computing sight. Any sight which includes an electrical or mechanical means for computing the proper angle between the line of sight to the target and the line of departure of the projectile. It usually includes means for automatically establishing the angle.

con (*abbr.*). 'Control.'

CONAD (*abbr.*). 'Continental Air Defense Command.'

CONARC (*abbr.*). 'Continental Army Command.'

conception. *Patent law.* The mental act in the making of a patentable invention which must precede reduction of the invention to practice, both of which elements are required to qualify for a patent.

concrete piercing fuze. See: **fuze, concrete piercing.**

concrete piercing projectile. See: **projectile, concrete piercing.**

concurrent repair parts. Those parts, tools and accessories procured and delivered into the Army supply system concurrently with delivery of end items. Such items are for support of maintenance during period between initial issue of end item and establishment of supply records to permit subsequent procurement and replacement by normal methods.

concussion fuze. See: **fuze, concussion.**

concussion grenade. See: **grenade, offensive.**

CONDITIONING KIT, ROCKET. A specifically designed item consisting of a tent shaped shelter of quilted insulated cloth, a light metal framework for support and a forced air heating unit for maintaining a rocket within its prescribed firing and/or storage temperature limits. May contain hand tools for assembling.*

condition of readiness. See: **antiaircraft condition of readiness.**

conduct of fire. All technical operations connected with

the actual application of effective fire upon a target.

cone. The hollow, conical shaped liner of a shaped charge. See also: **charge, shaped.**

cone of dispersion. 1. A term which can be applied to the pattern in space formed by any one of numerous phenomena which originate in a point source and spread out in conical form from the source. 2. Cone-shaped pattern formed by the paths of a group of shots fired from a weapon with the same sight setting; synonymous in this sense with *cone of fire* and *sheaf of fire*. 3. The pattern in space from the opening of *canister* (or *shrapnel*, now obsolete) in which the preformed pellets, under the influence of forward velocity and radial velocity, spread out to form a cone in space.

cone of fire. See: **cone of dispersion.**

cone of nulls. *Radar.* A conical surface formed by directions of negligible radiation.

cone of sight. General cone formed by straight lines radiating from the eye to the outer boundaries of an object.

conf (*abbr.*). 'Confidential.'

confidential. (*conf*) Of classified material: Having such security status that its unauthorized disclosure could be prejudicial to the defense interests of the nation. See: **classification; defense information.**

Often capitalized or written in full caps.

confinement. Physical restriction, or degree of such restriction, to passage of detonation wave or reaction zone as, for example, that of a resistant container which holds an explosive charge. See also: **charge, confined.**

confmod (*abbr.*). 'Confidential—Modified Handling Authorized.'

conical horn. *Electroacoustics.* A horn whose cross-sectional area increases as the square of the axial length.

conical scan. In radar, a scan made by a beam describing a cone, the point from which the beam is radiated being at the apex of the cone. Hence, *conical scanning.*

conjugate focal points (also **conjugate foci**). *Optics.* Those pairs of points on the principal axis of a mirror or lens so located that light emitted from either point will be focused at the other. Related points in object and image located optically so that for every point on the object there is a corresponding point in the image.

console. A grouping of controls, indicators, and similar items contained in a specially designed model cabinet for floor mounting and is an operator's permanent working position. Normally includes desk facilities. It may include components of an electronic set or an electrical system. Excludes SWITCHBOARD (as modified).*

CONSOLE, GUIDED MISSILE BATTERY CONTROL. A console specifically designed to be used in a guided missile remote control system. It provides facilities which indicate the status of each missile in a battery, prior to and including launching and

- firing. Also includes provisions for monitoring and adjusting circuits of an acquisition radar, cathode-ray tube presentation, and automatic plotting facilities showing target and missile data. May include intercommunications facilities. Excludes CONSOLE, RADAR SET.*
- CONSOLE, MISSILE GUIDANCE.** A console that is used with associated electronic sets and components for the command control of a guided missile.*
- constant amplitude recording.** *Electroacoustics.* A mechanical recording characteristic wherein, for a fixed amplitude of a sinusoidal signal, the resulting recorded amplitude is independent of frequency.
- constant-pressure combustion.** Combustion of fuel in a cylinder at a rate slow enough so that there is no rise in cylinder pressure. The slow-speed air-injection diesel is a constant-pressure-combustion engine.
- constant recoil.** Of recoil systems: Having no means of variation of the length of recoil. Cf: *variable recoil.*
- constant-velocity recording.** *Electroacoustics.* A mechanical recording characteristic wherein, for a fixed amplitude of a sinusoidal signal, the resulting recorded amplitude is inversely proportional to the frequency.
- constant-volume combustion.** Combustion in a cylinder while there is no change in clearance volume. All the energy of combustion goes to raise the cylinder pressure. The gasoline engine and many high speed diesels have constant-volume combustion, or operate on the Otto cycle.
- constrained shell analysis.** As applied to the design of rotating bands for artillery projectiles, an analysis that recognizes the possibility of band failure at one of three areas: the band land surface, the band land-groove fillet, or the inner surface of the band, and provides formulas for checking each of these points.
- constrictor.** The exit portion of the combustion chamber in some designs of ramjets, where there is a narrowing down of the tube at the exhaust.
- contact fire.** Method of firing a mine by which the mine is exploded immediately when touched by a vessel, vehicle or person. See: *mine, contact.*
- contact fuze.** See: *fuze, impact.*
- contact mine.** See: *mine, contact.*
- container.** (cntr) Any receptacle which holds, restrains or encloses an article to be stored or shipped. The term includes boxes, bags, crates, cans, drums, etc.
- CONTAINER, AMMUNITION, FIBER.** A cylindrical item made of spirally-wound, asphalt-impregnated paperboard. It is designed to be used for the protection of ammunition during storage, handling, and/or shipment. It may have a telescope type lid at one or both ends.*
- CONTAINER, AMMUNITION, METAL.** A cylindrical item with a detachable lid. It is designed to be used for the protection of ammunition during storage, handling and/or shipment.*
- CONTAINER, BOMB, AIRCRAFT.** A suspension device installed on, but not permanently fixed to an aircraft. It is designed for inclosing, attaching, arming and releasing of bombs. It may also be utilized to accommodate other projectiles.*
- CONTAINER, DEMOLITION CHARGE.** A metallic item of various shapes and sizes designed to be filled with an explosive charge so as to concentrate the energy of the explosive in one direction.*
- CONTAINER, PARACHUTE BOMB.** A protective cover for shipping and handling a bomb parachute and container.
- CONTAINER, SHIPPING AND STORAGE, GUIDED MISSILE.** A specifically designed end opening metal pressurized shipping and storage container. Designed with internal shock absorbing cradles to secure a guided missile. May have compartments for components and/or accessories. Equipped for handling by fork lift truck and/or hoist. Excludes DRUM, METAL and BOX, METAL, SHIPPING.*
- CONTAINER, SHIPPING AND STORAGE, GUIDED MISSILE WARHEAD.** A specifically designed reusable pressurized metal shipping and storage container. Equipped with integral shock absorbing cradles for securing a guided missile warhead. Equipped for handling by fork lift truck and/or hoist. Excludes DRUM, METAL and BOX, METAL, SHIPPING. See also: *CONTAINER, SHIPPING AND STORAGE, GUIDED MISSILE.**
- contamination.** Presence of, or act of placing on a person, object, or area, a chemical, biological or radiological (CBR) agent.
- continuous fire.** 1. Fire conducted at a normal rate without interruption for application of adjustment corrections or for other causes. 2. In field artillery, a succession of salvos, the pieces being fired consecutively at the interval designated in the command.
- continuously pointed fire.** A system of fire control which supplies firing data to the gun continuously instead of at a fixed interval, such as predicted concentration.
- continuous-pull firing mechanism.** This type of firing mechanism is used on weapons firing fixed or semi-fixed ammunition. Aside from safety devices, the firing lock is not affected by motion of the breech-block. The complete operation of a continuous-pull firing mechanism is effected by one continuous pull of the lanyard. There are three phases in the firing cycle: (1) *Cocking phase.* The first part of a pull on the lanyard compresses the firing spring. (2) *Firing phase.* The remaining part of the lanyard's movement disengages the sear, thus allowing the spring to expand and force the firing pin against the primer, firing it. (3) *Retracting phase.* The lanyard slacks, and the firing mechanism parts return to their position at rest.
- continuous sampling plan.** An inspection and sampling plan, under which a large number of consecutive units of the product as produced are inspected, and if this inspection shows the product to be satisfactory, followed by sampling and inspection and/or test of

the qualified product. This method is applied only to production of the conveyer-line type, where formation of inspection lots for lot-by-lot acceptance would be artificial, and sampling of the product as produced furnishes better control.

contracting officer. Any officer or civilian employee authorized to enter into and administer contracts and to make determinations and findings with respect thereto.

contractor vehicle. Administrative vehicle which will not be given the appearance or marking of a military vehicle and will not be operated under a United States Army registration number because the vehicle has been turned over for operation by the contractor at a contractor-operated installation or facility. To assist in maintenance of property, the United States Army registration number is painted within the hood.

contract termination. Termination or cancellation, in whole or in part, of work under a prime contract for the convenience or at the option of the Government, except for default of the prime contractor, or of work under a subcontract for any reason, except the default of the subcontractor.

contra-injection. The injection of fuel into the air stream in a direction opposite to the flow of air.

control. (con) 1. *Missiles.* The entire processes of intelligence and maneuver intended for reaching a specified destination, with special connotation on changes in course owing to data which may be observed and computed either in the missile or externally. 2. *General.* A device for effecting a change in action.

control, bang-bang. See: **bang-bang control.**

CONTROL, BOMB FUZE. A control consisting of a panel containing dials, relays, switches, or the like. It is used to determine the mode of operation of a bomb fuze.*

CONTROL BOX, UNDERWATER MINE. An electrochemical timing and switching device that prescribes overall control of an underwater mine during its live period. This includes timing of the live and dead periods, and combining the output signals of various influence firing mechanisms.*

CONTROL CABLE, TORPEDO. A definite length of CABLE, SPECIAL PURPOSE, ELECTRICAL, having the ends processed or terminated in fittings which provide for connection to terminal points in a torpedo, to provide power to the control elements, and transmit signals to the control surface and elements.

control circuits. The circuits of a digital computer which affect the carrying out of instructions in proper sequence, the interpretation of each instruction, and the application of the proper commands to the arithmetic element and other circuits in accordance with this interpretation.

CONTROL, GYRO, GUIDED MISSILE TAIL. An item designed to govern the control surfaces of the tail of a guided missile.*

controllability. A quality of a missile, aircraft or other vehicle that makes for effectiveness and ease of control.

controlled-devices countermeasure. Usually *pl.* Any **electronic countermeasure** (which see) against guided missiles, pilotless aircraft, proximity fuzes, or similar devices.

controlled line. In a computing gunsight system, an imaginary line the direction of which is directly determined by the operator or servomechanism when tracking a target and used for reference.

controlled mine. See: **mine, controlled.**

controller. 1. Operator of azimuth or elevation controls in a searching unit. 2. Electrical device used in maintaining distant control over machines, such as the braking system in a truck and trailer unit.

control-plane. The qualifying term which describes the transmitting antenna on an aircraft which radiates the control signal by which a guided bomb is steered.

control, proportional. Control in which the action to correct an error is made proportional to that error.

CONTROL, REMOTE, LAND MINE FUZE. A control utilized to accomplish selective arming and disarming of land mine fuzes from a position located in friendly territory.*

control surface. 1. In a broad sense, any movable airfoil used to guide or control an aircraft, guided missile, or the like in the air, including the rudder, elevators, ailerons, spoiler flaps, trim tabs, and the like. 2. In restricted usage, one of the main control surfaces, i.e., the rudder, an elevator, or an aileron.

In certain usage, the term (sense 1) has been made to include the vertical and the horizontal stabilizers. To avoid ambiguity, the phrase 'main control surface' is sometimes used for the restricted sense.

CONTROL UNIT, PARACHUTE, UNDERWATER MINE. A barometrically actuated item designed to open an underwater mine parachute at a predetermined altitude.*

control vehicle. 1. Vehicle in which the commander or internal control officers ride. 2. A standard vehicle of known capabilities operated alongside an experimental test vehicle for purposes of comparison.

conventional bomb. See: **bomb, conventional.**

conventional warfare. 1. Warfare conducted without the use of bacteriological, chemical, or atomic weapons. 2. Warfare conducted without resort to guerrilla forces, to the use of evasion and escape procedures, or to the employment of subversive action. See: **unconventional warfare.**

converging fire. Fire from a number of guns directed at the same spot.

converging lens. Also known as convergent lens, positive lens, convex lens, collective lens. A lens that will converge parallel light. One surface of a converging lens may be convexly spherical and the other plane (planoconvex), both may be convex (double convex), or one surface may be convex and the other concave (convexoconcave, meniscus converging). A converging lens is always thicker at the center than at the edge.

CONVERSION KIT, DEPTH CHARGE. A group of items designed to convert a depth charge to a

controlled mine or a demolition kit.* See also: **CHARGE, DEPTH**; **demolition kit**; **mine, controlled**.

CONVERSION KIT, FIRE BOMB. A group of items designed to convert a fire bomb from impact type of fuzing to variable time type of fuzing.*

CONVERSION KIT, FRAGMENTATION BOMB. A group of items designed to convert fragmentation bomb(s) from fin assembly type of stabilization to parachute type of stabilization.*

conversion transducer. A transducer in which the input and useful output frequencies are different.

converter. *Electronic computers.* A unit which changes the language of information from one form to another so as to make it available or acceptable to another machine, e.g., a unit which takes information punched on cards to information recorded on magnetic tape, possibly including editing facilities.

CONVERTER-OSCILLATOR. An item having the dual functions of changing the waveform of received frequency shift signals to amplitude modulated or direct current signals and of generating a radio frequency signal to be applied to a radio transmitter.*

CONVERTER, WAVE FORM. A device which by means of electron tube(s) or other electronic or electrical means accepts an input signal, usually of sinusoidal wave form, and produces an output signal whose wave form is radically different from that of the input signal. Excludes items containing pulse generators requiring external triggering. See also: **NETWORK, PULSE FORMING**, and **CHOPPER, ELECTRONIC**.*

convertible vehicle. Vehicle that can be changed from the wheeled type to the track-laying type.

convex lens. See: **converging lens**.

convexo-concave lens. A lens with one convex and one concave surface; it is mounted with the convex surface toward the object.

cook-off. The deflagration or detonation of ammunition caused by the absorption of heat from its environment. Usually it consists of the accidental and spontaneous discharge of, or explosion in, a gun or firearm, caused by an overheated chamber or barrel igniting a fuze, propellant charge, or bursting charge.

cooling fin. Any one of a number of vanes machined around a cylinder on an air-cooled engine in order to offer more surface area to the flow of cooling air.

coordinate. (cord) In mathematics and mapping, any of two or more distances that define the position of a point, line, or plane by reference to a fixed figure or system of lines. The reference X- and Y-lines used in common problems involving graphs are coordinates.

copper. Short for **gage, copper crusher** (which see).

copper crusher gage. See: **gage, copper crusher**.

coppering. Metal fouling accumulated in the bore of a weapon due to repeated firing. The metal is deposited from the rotating bands or jackets of the projectiles.

copper pressure gage. See: **gage, copper crusher**.

copyright. The right of literary property as recognized and sanctioned by positive law. An intangible, in-

corporeal right granted by statute to the author or originator of certain literary or artistic productions, whereby he is invested, for a limited period, with the sole and exclusive privilege of multiplying copies of the same and publishing or selling them.

cord (*abbr.*). 'Coordinate.'

CORD, DETONATING. Flexible fabric tube containing a filler of high explosive intended to be initiated by a blasting cap or electric detonator. See also: **fuze**.

cordeau. See: **CORD, DETONATING**.

cordite. Traditional British propellant. Double base propellant in the form of cords, composed of gun-cotton, nitroglycerin, and mineral jelly, used by some foreign nations, and to some extent in the US, as a propellant. See: **propellant**.

cord propellant. See: **cordite**.

CORE MEMORY UNIT. An electronic item which accepts and systematically retains digital input data in such a manner as to facilitate rapid recovery of the stored information. The item consists of one or more three dimensional memory array frames and wired ferrite cores. Includes core selector circuitry and signal drivers. May include memory address register. See also: **MAGNETIC DRUM, DATA STORAGE**.*

corner reflector. A combination of metallic surfaces mutually intersecting to form an inside corner, especially designed to reflect electromagnetic radiations efficiently.
A corner reflector may be used as a marker or as a component of a certain kind of antenna, or it may be used to render another object or location more conspicuous to radar search.

Cornhusker Ordnance Plant. Ordnance Corps field installation located at Grand Island, Nebraska.

Corporal. Name applied to an Army surface-to-surface ballistic missile designed for use as a tactical weapon against enemy troop concentrations or installations. It is liquid-fueled and is supersonic. It can carry either a conventional high explosive warhead or a nuclear warhead.

corrected azimuth. Azimuth of the axis of the bore of a gun firing on a moving target, after allowances have been made for atmospheric, materiel and other variable conditions.

corrected compass course. Same as **magnetic course**.

corrected compass heading. Same as **magnetic heading**.

corrected deflection. Horizontal angle between the line of sight and the axis of the bore of the gun after allowances have been made for atmospheric, materiel and other variable conditions.

corrected elevation. Firing table elevation corresponding to the corrected range.

corrected lens. A compound lens, the various surfaces of which have been so designed with respect to each other that the lens is reasonably free from one or more aberrations.

corrected range. Actual range with allowances made for weather conditions, variation in ammunition,

wear in the gun, or any other variations from standard conditions, so that the projectile will carry to the target.

correction. 1. Any change in firing data to bring the center of impact of burst closer to the target. 2. *Electronic computers.* The quantity which is added to a calculated value to obtain the correct value.

correction wedge. In range finders and height finders, a rotating wedge-shaped element used to precisely divert the line of sight to correct errors in the optical system caused by temperature variations.

correction windows. These are optical wedges of very small angles. They admit light, seal out dirt and moisture, and are so mounted that they may be rotated to compensate for the accumulated errors in the entire system. Two are used as end windows on some range finders. See: **WINDOW, OPTICAL INSTRUMENT.**

CORRECTOR, CANT. A device used to correct gunnery errors when the gun trunnions are not parallel to a horizontal plane.*

corrector setting. The setting applied on the fuze setter in order to set the fuze at a different value from that determined by the normal operation of the data computer.

corresponding range. 1. Range corresponding to a given angle of elevation of a weapon. 2. *Specif.* Range corresponding to the lowest trajectory which passes safely over the heads of friendly troops.

CORROSION PREVENTIVE COMPOUND. A coating formulated to physically exclude corrosion causing substances from metal surfaces, and which can be removed by wiping. It may contain corrosion inhibitors. Excludes lubricants.*

CORROSION REMOVING COMPOUND. A chemical product designed for removal of corrosion such as rust formed on metal surfaces by oxidation, hydration, and carbonation. Excludes corrosion inhibitors and **SCALE REMOVING COMPOUND.***

Corvus. Navy air-to-surface missile for use by carrier aircraft, powered with solid propellant motor.

cosmotron. An apparatus similar in purpose to the bevatron but on a smaller scale.

cost-plus-a-fixed-fee contract. (CPFF contract) Type of contract, limited in use, whereby the contractor is paid a fixed fee limited to a per centum of the estimated cost of the contract and providing for payment of all allowable costs as defined in the contract.

cost-reimbursement-type contract. Includes cost or cost-sharing contracts, and cost-plus-fixed-fee contracts.

count down. Period of time during which final preparation and checking is done before the firing of a missile. The term is also applied to the process of 'counting down' or indicating periodically the time remaining before 'zero' which is the firing time.

counter. *Electronic computers.* 1. In mechanical analog computers, a means for measuring the angular displacement of a shaft. 2. A device capable of

changing from one to the next of a sequence of distinguishable states upon each receipt of a discrete input signal.

The term 'counter' is in some cases used to mean 'accumulator.'

counterbattery fire. Fire specifically directed against enemy artillery or control stations; counterbattery.

counter chronograph. See: **chronograph.**

counterfire. 1. Fire delivered in answer to the fire of an attacker. 2. Fire intended to destroy or neutralize enemy weapons.

countermining. Method of destroying mines by detonating them with nearby explosions.

countermining radius. The least practicable distance between mines to avoid chain countermining.

counterpoise. 1. Mechanism that counterbalances the weight of the breechblock of a large gun, making it easier to open and close. 2. See: **COUNTERPOISE, ANTENNA.**

COUNTERPOISE, ANTENNA. A conductor or system of conductors, fabricated or arranged in a specific pattern, to simulate the properties of an electrical ground.*

counterrecoil. Forward movement of a gun returning to firing position (battery) after recoil.

counterrecoil buffer. That part of a recoil system which retards the gun and recoiling parts, during their return into battery, so that no disturbing violence results. The type most generally used is the **dashpot**, which see.

counterrecoil mechanism. A hydraulic, pneumatic, or mechanical system that returns a gun into battery, or firing position, after recoil; a recuperator; a recuperator mechanism.

counterrecoil velocity. The speed with which a gun returns into battery after recoil.

COUNTER, SHIP, UNDERWATER MINE. An item designed to count the number of ships passing over an underwater mine. It is set to allow detonation after a predetermined number of ships have passed.*

counterweight. A weight used to counteract another weight or force; a counterpoise.

coupling. *Electricity.* A mutual relationship between two circuits such that a transfer of energy between them is permitted.

COUPLING BASE, FIRING DEVICE. A device by means of which a standard firing device may be connected to a black powder igniter or blasting cap. The item is threaded on one end to screw into a standard firing device and at the other end to screw into a cap well of demolition charge or certain types of land mines. It may or may not be assembled with a percussion primer.*

course. (crs) 1. Path taken or planned for an aircraft, tank, person, etc. 2. See: **compass course.**

course error. The angular difference between the planned course and the course made good.

course line. 1. A line representing the planned course of an aircraft or missile. 2. A line of position as plotted on a chart, lying parallel or almost parallel

to the planned course of an aircraft or missile, and showing whether the aircraft or missile is to the right or left of the course.

course-line computer. An airborne electronic device that continually computes an aircraft's position in terms of its departure from course and its distance from destination. Also called an 'offset-course computer.'

The course-line computer works in conjunction with omnirange and distance-measuring-equipment transmissions.

course-line-deviation indicator. A cross-pointer instrument indicating deviation from a course line.

course-line selector. An instrument providing means to select the course to be flown.

COVER, ANTITANK MINE. An item specifically designed for use with light antitank mines to prevent entry of dirt, stone, or sand in the working space between the mine body and the mine pressure plate.*

COVER, BALLISTIC CASE NOSE SECTION. An item, usually of fabric, designed to provide protection for the nose section of a ballistic case.*

cover, fuze. Metal cover which fits over nose fuze on projectile to waterproof and to prevent damage during handling and shipment. Sometimes called 'waterproof protective cap.'

COVER, PROTECTIVE, ROCKET WARHEAD. A collection of items consisting of a canvas cover, framework, and the like. Used for protection of a rocket warhead and operating personnel during installation, and as a security measure against observation of installation procedure. Excludes NET, CAMOUFLAGE and CAMOUFLAGE NET SET (as modified).*

COVER, ROCKET MOTOR, ELECTRICALLY HEATED. An electrically heated item consisting of a shell, heating element and the like, designed to preheat a rocket motor.*

cover, rocket nozzle. See: FAIRING, NOZZLE, ROCKET.

COVER, TANK COMMANDER'S CUPOLA. A cover generally made of waterproof material and used to protect the contents of a CUPOLA, TANK COMMANDER'S. It may have facilities for mounting on the cupola.*

cowling. A covering of metal, wood, or other material for directing and regulating the flow of cooling air, for streamlining, or for protecting the part or section covered; *specif.*, an engine cowling.

CP (abbr). 1. 'Concrete piercing.' 2. 'Command post.'

CPFF (abbr). 'Cost-plus-a-fixed-fee.'

crab angle. See: angle, crab.

cradle. The nonrecoiling structure of a weapon that houses the recoiling parts and rotates about the trunnions to elevate the gun.

CRADLE, BOMB HANDLING. A rigid wood and/or metal frame structure, designed with a concave load bearing surface to prevent movement of a bomb during handling. May be manually carried or an

attachment for a vehicle. Excludes skids. See also: TRUCK, AIRCRAFT BOMB and TRAILER, BOMB.*

CRADLE, CANNON. An item designed to support a cannon and which allows the cannon to recoil and counterrecoil. It also provides a means of securing the recuperator and recoil cylinders or the recoil piston rod(s). It has facilities for attaching to a mount or carriage of a gun or howitzer.*

crane. A machine for raising and lowering heavy weights and, while holding them suspended, transporting them through a limited lateral distance, and which may be manually or power operated and either fixed or mobile.*

crane, ammunition. Lifting device incorporated on the carriage of some heavy artillery for lifting the ammunition and placing it on the loading tray from which position it is loaded into the gun.

CRANE, BRIDGE TRAVELING. A crane in which the hoisting apparatus is supported by a trolley which runs on an overhead track, or bridge, which, in turn, is supported either by ground level end trucks running on rails or on floor level wheels.*

CRANE, GANTRY REVOLVING. A crane in which the hoisting apparatus is located in the crane cab with the hoisting lines running over a boom to ground level. The crane is supported by a structural gantry-type framework of variable height which may be stationary or mobile mounted. The gantry is generally constructed to provide a portal clearance for vehicles operating under the crane.*

CRANE, OVERHEAD TRAVELING. A crane in which the hoisting apparatus is supported by a trolley running on an overhead track, on girders which are affixed to overhead and trucks at both ends.*

crane-shovel. A convertible type, power operated machine designed to utilize a shovel-front, a skimmer or backhoe attachment for excavation work, or a crane boom with attachments, such as clamshell, hook, dragline or pile-driver.*

crankshaft. A shaft driven by a crank; *specif.*, the shaft of an internal-combustion reciprocating engine by which reciprocating motion is changed into rotational motion.

Cranz, law of. A statement of the supposed similarity in behavior of shaped charges if the diameter is taken as the basis of comparison, and the charges are geometrically similar.

crash helmet. Heavy padded helmet worn as protection against head injuries in tank or aircraft.

crash pad. Thick pad fastened around the instrument panel or on other projections, in aircraft or tanks, to protect operators from injury in case of accident.

crater. Hole in the ground caused by an explosion.

crater analysis. Process by which the direction of hostile shelling is determined from analysis of the burst pattern of the craters. At the same time, fragments are collected and studied to determine their caliber.

cratering charge. See: charge, cratering.

CRATE, WOOD. A container of frame construction with sides, bottom, and top. It may be sheathed or unsheathed.*

creep. 1. Forward motion of fuze parts relative to the missile that is caused by deceleration of the missile during flight. Also called 'creep action.' 2. An undesirable play or movement, or a tendency thereto, in a mechanism. 3. Slight unintentional movement of a vehicle, or turret of a tank, caused by the constant application of a small amount of power.

creeping method of adjustment. Method of getting the range of an enemy position close to friendly troops by firing the first set of shots too far, then gradually and carefully shortening the range.

creep spring. In the fuze design, a spring used to prevent creep action. See also: creep.

crew-served. Of or pertaining to anything served or operated by a crew as distinguished from an individual; e.g., a weapon operated by a crew of two or more persons.

CRIMPER, BLASTING CAP. A manually operated tool designed for fastening blasting caps to safety fuse.*

crimping. 1. Mechanical operation on metal or other material by which the material is permanently deformed, usually by small undulations, frills or wrinkles. 2. The process by which the cartridge case is secured to the projectile, either by a continuous folding in of the neck of the cartridge case into the crimping groove or by a series of deformations (crimps) at a location somewhat below the cartridge case mouth. 3. In blank small arms ammunition, the closing in of the neck of the cartridge case to secure the wadding over the charge.

crimping groove. Groove around a projectile base which provides a means of crimping the cartridge case to the projectile. See also: crimping.

critical altitude. The maximum altitude beyond which the propulsion system of a guided missile will not perform satisfactorily.

critical angle. *Optics.* That angle at which light, about to pass from a medium of greater density to one of lesser density, is refracted along the surface of the denser medium. When this angle is exceeded, the light is reflected back into the denser medium. The critical angle varies with the *index of refraction* of the substance or medium.

critical angle of attack. See: angle of attack, critical.

critical defect. See: classification of defects.

critical item. An essential item which is in short supply or expected to be so.

critical mass. The minimum mass, when related to a specific shape and environment, of a fissionable material necessary to sustain a nuclear chain reaction.

critical material. Any raw or partially-processed material essential in a national emergency and not expected to be available in quantity, quality, or time to meet requirements unless stockpiling action is taken. Cf: strategic material.

critical pressure ratio. In nozzle flow, that outlet-to-chamber-pressure ratio which just produces $M = 1$ at the throat.

critical velocity. A term used by the British in evaluating the performance of an AP projectile against armor plate. For each combination of projectile and plate of certain physical characteristics and thickness, there is theoretically a striking velocity at which complete penetration would just occur. This theoretical velocity, determined in a certain prescribed manner, is called the *critical velocity*. See: ballistic limit.

critical zone. Area over which a bombing plane in horizontal flight or glide bombing must maintain straight flight so that the bombsight can be operated properly and bombs dropped accurately.

cross-drive transmission. A transmission which changes speed and torque ratios, varies the speeds of the output shafts, and provides differential action to permit the steering of track-laying vehicles. It consists of a torque converter and a number of planetary gear trains, producing a split torque. The name is taken from the main cross shift, which is across the axis of power flow from the engine.

crossfire. Two or more intersecting lines of gunfire.

cross hair. An inscribed line or a strand of hair, wire, silk, or the like used in an optical sight, transit, or similar instrument for accurate sighting.

A cross hair may or may not cross another strand or line.

crossing target. Moving target that crosses the line of sight at any angle. In firing at a crossing target, the firer must aim ahead of, or lead, the target so that the paths of the target and bullet will meet.

cross-level. To level a weapon or instrument, such as a mortar or surveyor's transit, at right angles to the line of sight.

cross-modulation. *Receivers.* Modulation of a desired signal by an undesired signal.

cross-polarization. The component of the electric field vector normal to the desired polarization component.

crossstalk. The interference between nearby circuits, wherein signals in one circuit are undesirably reproduced in another, or other circuits.

crosswind. 1. *Ballistics.* Component of the *ballistic wind* which acts in a direction perpendicular to the direction of fire. 2. A wind blowing from such direction that its principal effect is to cause a given aircraft to drift or move laterally; a wind that blows across something.

crosswind force. *Ballistics.* Component of the total air resistance acting in the plane of yaw perpendicular to the direction of motion of a projectile or missile. Also known as 'lift,' esp. in connection with aircraft and winged missiles. See: lift.

crown. 1. The upper part of a parachute canopy. 2. Term often used to designate the top of an engine piston.

crown glass. One of the two principal types of optical glass; the other type is *flint glass*. Crown glass is

harder than flint glass, has a lower index of refraction, and lower dispersion. Both types are used in the making of compound lenses.

crs (*abbr.*). 'Course.'

cruciform. A configuration in form of a cross with equal legs, 90° apart. Shape used for certain grains of rocket propellant.

crusher gage. See: **gage, copper crusher**.

CRYPTOGRAPHIC EQUIPMENT DESTROYER, INCENDIARY. An item designed to be filled with an incendiary mixture and to destroy, by burning, cryptographic equipment and associated material. It is provided with a mechanical fuze and electrical squib(s). If used for training or instructional purposes, it is either empty of incendiary mixture or sectionalized and filled with simulated incendiary mixture, and in either condition is provided with an inert fuze and inert squib(s). Excludes **FILE DESTROYER, INCENDIARY**.*

CRYSTAL BLANK, QUARTZ. An item cut from quartz and ground to an approximate size and frequency. It is designed to be later finished to an exact frequency and mounted in a holder to form a **CRYSTAL UNIT, QUARTZ**.*

crystal oscillator. An oscillator in which the frequency is controlled by a crystal.

CRYSTAL UNIT, QUARTZ. An item consisting of one or more quartz crystal plates processed to a specific frequency contained in a **HOLDER, CRYSTAL UNIT**. It may include integral capacitor(s) and/or facilities for temperature control.*

C-scope. A cathode-ray tube or screen that displays a signal with elevation indicated by a vertical displacement of the signal on the screen and azimuth by a horizontal displacement.

ctg (*abbr.*). 'Cartridge.'

ctms (*abbr.*). 'Countermeasures.'

CUPOLA, TANK COMMANDER'S. A turret-type steel casting item which is a rotatable dome, mounted on the turret roof of a combat tank. It has facilities for mounting a gun and is designed to protect the commander or gunner from enemy fire.*

CURTAIN, FLAK PROTECTIVE. A curtain designed to protect air crew members from enemy missile fragments.*

CURTAIN, GASPROOF. A curtain designed to provide a seal for exits and/or windows of a building for protection against gas attack.*

curved fire. Fire with low velocity and relatively large curvature of the trajectory at normal ranges. Cf: **flat trajectory fire**.

CUSHION, INSTRUMENT, UNDERWATER MINE. An item fabricated from a resilient material, molded or cut into various shapes. It is designed to be fitted around a delicate instrument within an underwater mine to absorb the shock of the underwater mine entering the water when launched from an aircraft.*

CUSHION SET, INSTRUMENT, UNDERWATER

MINE. A group of two or more **CUSHION, INSTRUMENT, UNDERWATER MINE**.

cutaway. An object with a part of its covering or surface removed to show its interior construction or movements; a model or illustration of such an object.

cutoff point. A point on the trajectory of a ballistic missile or other airborne object at which the fuel is exhausted or cut off.

cut paraboloidal reflector. A paraboloidal reflector which is not symmetrical with respect to its axis.

CUTTER, POWDER ACTUATED. A tool designed to cut wire rope, rod, pipe, and like items by utilizing an explosive charge to actuate a cutting blade. In operation the tool is not fixed and is controlled by hand. The items are suitable for use under water as well as above water.*

CUTTER, POWDER ACTUATED, REEFING LINE. An explosive actuated item designed to cut the reefing line of a reefing device used to restrain the opening of high speed parachutes during initial deployment.*

cutting charge. See: **charge, cutting**.

cveh (*abbr.*). 'Combat vehicle.'

CW (*abbr.*). 'Chemical warfare.'

cyanogen chloride. (CK) See: **CHEMICAL AGENT, CYANOGEN CHLORIDE**.

cybernetics. The comparative study of the control and intracommunication of information-handling machines and nervous systems of animals and man in order to understand and improve communications, e.g., a study of the art of the pilot or steersman.

cycle. 1. A complete series of recurring values or events; *specif.*, the series of actions an internal-combustion piston engine must perform to operate and deliver power. See: **four-stroke-cycle engine; two-stroke-cycle engine**. 2. a. *Electricity*. One positive alternation of current and one negative alternation. b. *Electronics*. The recurring alternation of an electromagnetic wave from one amplitude to another, beginning and ending at zero amplitude.

cyclic change mechanism. See: **cyclic rate mechanism**.

cyclic rate. The rate at which a succession of movements repeats itself, applied esp. to the rate of fire of an automatic weapon; the maximum rate of fire for a given automatic weapon.

cyclic rate mechanism. Device on an automatic gun, such as the Browning automatic rifle, with which the rate of fire of the gun can be controlled, either to reduce it or to increase it.

cyclonite. (RDX) A white crystalline explosive, $(\text{CH}_2)_2\text{N}_2(\text{NO}_2)_4$, having high sensitivity and brisance. Cyclonite is used with other explosives or substances to form explosive mixtures and compositions. See also: **composition**.

cyclotol. High explosive composed of RDX (cyclonite) and TNT. Mixtures containing up to 75 percent RDX can be loaded by casting.

cyclotron. An apparatus for imparting high speeds to atomic particles by magnetically accelerating them

in spiral paths, used esp. for bombarding atoms to produce transmutation and artificial radioactivity. Cf: **betatron**; **bevatron**; **cosmotron**.

cyl (*abbr*). 'Cylinder.'

cylinder. (*cyl*) 1. *Mechanical*. A chamber, circular in cross section, the length being greater than the diameter and designed to permit the reciprocating movement of a piston within.* 2. The rotating chamber of a revolver type weapon.

CYLINDER ASSEMBLY, HYDRAULIC BRAKE, MASTER. A device consisting of a reservoir and/or **CYLINDER, HYDRAULIC BRAKE, MASTER** with other components necessary to displace fluid from a central source for actuating the slave or wheel cylinders of a hydraulic brake system.*

CYLINDER ASSEMBLY, HYDRAULIC BRAKE, WHEEL. A device consisting of a **CYLINDER, HYDRAULIC BRAKE, WHEEL** with a piston(s) and other component parts which is mounted to the back plate of a wheel. It uses the flow and pressure of a fluid to create the linear motion required to operate the brake shoes of a hydraulic brake system.*

cylinder barrel. A type of shotgun barrel with cylindrical bore, i.e., without **choke** (which see).

CYLINDER, COUNTERRECOIL. A cylinder with component parts designed to compress fluid for the recuperator assembly of a gun. See also: **CYLINDER, RECUPERATOR**.* Part of the recoil mechanism, which see.

CYLINDER, HYDRAULIC BRAKE, MASTER. A cylinder, usually incorporating an integral reservoir, designed to house the necessary component parts of a hydraulic brake master cylinder assembly.*

CYLINDER, HYDRAULIC BRAKE, WHEEL. A cylinder designed to house the piston and other necessary component parts of a **CYLINDER ASSEMBLY, HYDRAULIC BRAKE, WHEEL**.*

CYLINDER, RECOIL. A cylinder with component parts designed to cushion the backward motion of a cannon by springs or by the slow passage of air or fluid through holes in the piston when the gun is firing.* Part of the **recoil mechanism**, which see.

CYLINDER, RECUPERATOR. A cylinder with components designed to return a cannon to proper firing position after recoil. See also: **CYLINDER, COUNTERRECOIL**.* Part of the recoil mechanism, which see.

CYLINDER, RELEASE. An element of the propellant control for a guided missile. See also: **RELEASE, PROPELLANT VALVE, GUIDED MISSILE**.

cylindrical lens. A lens ground with a cylindrical surface instead of a spherical one. Lenses ground in this manner are used in spectacles to correct astigmatism, and in range finders to cause astigmatism by stretching points of light into lines of light.

cylindrical reflector. A reflector which is a portion of a cylinder. This cylinder is usually parabolic, although other shapes may be used.

CZ (*abbr*). 'Combat zone.'

D

- D** (*abbr.*). In jato unit nomenclature, designates a cast double base propellant.
- DA** (*abbr.*). 1. 'Department of the Army.' 2. Chemical agent, 'diphenylchloroarsine' (war gas). 3. 'Detroit Arsenal.'
- DAF** (*abbr.*). 'Department of the Air Force.'
- daisy-cutter**. An antipersonnel fragmentation bomb fuzed to burst on impact. *Slang.*
- dam** (*abbr.*). 'Damage.'
- damage**. (*dam*) 1. An injury short of complete destruction inflicted upon persons, equipment, or installations. 2. To cause damage, sense 1.
- damage assessment**. The result of examination of combat materiel, particularly aircraft and armored vehicles, after a simulated attack, to determine the category in which the damage resulting from the attack would be placed. (See: **damage categories**.) By the assessment, the individual or team making the examination, determine as accurately as possible the probability, in percentage points, that the inflicted damage would produce a result corresponding to a certain damage category.
- damage assessment table**. A device for the graphic presentation of the results of damage assessment.
- damage categories**. Two damage category classifications applying to combat material subject to attack have been accepted, for use in evaluating damage, and damage potential of ammunition. The first classification, applied to *aircraft*, employs the following damage evaluation terms:
- K damage*—Damage such that the aircraft will fall out of control immediately after the damage occurs.
 - KK damage*—Damage such that the aircraft will disintegrate immediately after the damage occurs.
 - A damage*—Damage such that the aircraft will fall out of control within five minutes after damage occurs.
 - B damage*—Damage such that the aircraft will be unable to return to its base.
 - C damage*—Damage that will prevent the aircraft from completing its mission.
- The second classification, applied to *armored vehicles*, employs the following damage evaluation terms:
- K damage*—Damage that will cause the vehicle to be destroyed.
 - F damage*—Damage causing complete or partial loss of the ability of the vehicle to fire its main armament and machine guns.
 - M damage*—Damage causing immobilization of the vehicle.
- damage evaluation**. See: **damage assessment**.
- damage potential**. The damage which a projectile or explosive can be expected to do to a specific target.
- damage radius**. 1. The distance at which, in terms of experience or theoretical calculations, certain types of damage can be expected from a specified type of explosive item. 2. *Atomic explosion*. The distance from ground zero at which there is a 50 percent probability that a target element susceptible to the weapon effect considered will be damaged.
- damp**. Frequently with *out*. 1. To cause an oscillating needle or other indicator to come to rest. 2. To cause an oscillating object, as an airplane or rocket, to cease oscillating. 3. To absorb shock.
- dampener**. *Cartridge actuated devices*. Hydraulic or pneumatic device incorporated in or attached to a CAD as a restraint to limit velocity of stroke.
- damping**. The action of reducing the oscillations of a wavering body, or bringing an oscillating instrument to rest.
- damping factor**. A measure of the tendency of a recurring phenomena, such as vibration, to reduce in intensity or amplitude. In exterior ballistics four damping factors are of importance: *yawing moment damping factor*, *crosswind force damping factor*, *spin decelerating moment damping factor*, and *Magnus moment damping factor*.
- damping force**. Any force acting on a body (or system) to progressively reduce oscillations of the body.
- danger space**. 1. That portion of the range within which a target of given dimensions could be hit by a projectile with a given angle of fall. Specifically, the danger space is the space in which the trajectory of rifle or machine gun bullets does not rise above the average height of a man. 2. Space around the bursting point of an antiaircraft projectile.
- DAPE** (*abbr.*). 'Developed armament probable error.'
- dark ignition**. (DI) Igniter for tracer with low luminous intensity to prevent blinding of gunner.
- Dart**. Name applied to an Army surface-to-surface missile for attack of tanks. It is command-guided by means of wires unreel from the missile. Uses solid fuel. Experimental.
- dashpot**. A type of buffer consisting of a rod which slides in and out of a close-fitting cylindrical cavity in a piston rod. This type of buffer is used in some recoil systems to cushion the movement of the recoiling parts as they near the end of recoil and again during return to battery; dashpot buffer.
- DASHPOT, ANCHOR, UNDERWATER MINE**. An item consisting of a cylinder and piston with a means of securing on both ends. Its purpose is to delay release of the anchor plummet by a restricted passage of fluid through an orifice or around the piston.* See also: **RELEASE, ANCHOR, UNDERWATER MINE**.

- data card.** See: **ammunition data card.**
- data computer.** Mechanical or electromechanical device that receives continuous present position data on airplane or other moving target, and continuously calculates firing data for use against such a target. One of the components of a director. Also called 'computer.'
- data receiver.** Instrument, part of a data transmission system, which receives data from another instrument. See: **data transmission system**; **data transmitter.**
- data-reduction.** The art or process of transforming masses of raw test or experimentally obtained data, usually gathered by instrumentation, into useful, ordered, or simplified intelligence.
- data transmission system.** System used for transmitting data; for example, one in which firing data are electrically transmitted from a data computer to dials and controls at the guns.
- data transmitter.** Instrument, part of a data transmission system, which transmits data to another instrument. See: **data receiver**; **data transmission system.**
- datum dimension.** In dimensioning, an untoleranced but theoretically exact dimension locating a point, line, or plane, at which the feature of a part must be within certain specified limits, or may be the exact dimension of a feature the location of which may vary within specified limits.
- datum elements.** In dimensioning and tolerancing, datum surfaces, datum planes, datum diameters, etc. Features of a part which are assumed to be exact for purposes of computation or reference, while another feature or other features of the part may vary with respect to the datum.
- Davis wing.** A narrow-chord wing having comparatively low drag and a stable center of pressure, that develops lift at relatively small angles of attack.
- day of fire.** Term formerly used for **ammunition day of supply** (which see).
- day of supply.** The estimated average daily requirement for various supplies by a person or force. See also: **ammunition day of supply.**
- DB (abbr).** 'Depth bomb.'
- DBT (abbr).** 'Dibutylphthalate' (propellant additive).
- DBX.** A depth bomb explosive containing RDX, ammonium nitrate, TNT, and aluminum in the ratio 21/21/40/18.
- DC (abbr).** Chemical agent, 'diphenylcyanoarsine' (war gas).
- DCSLOG (abbr).** 'Deputy Chief of Staff for Logistics.'
- D-day.** The unnamed day on which hostilities, an operation, or an exercise commences, or is to commence; in mobilization planning, the day hostilities commence.
- DDNP (abbr).** 'Diazodinitrophenol' (explosive).
- deactivate.** The act of rendering an explosive device inert or harmless. See also: **defuze**; **disarm.**
- dead area.** See: **dead space.**
- deadline.** Remove from action, as for repairs. See: **deadlined equipment.**
- deadlined equipment.** Any major end item of authorized equipment charged to a using unit or agency which has been removed from operation or immediate operation readiness because of actual or potential mechanical, electrical or safety device failure. It does not include equipment scheduled for routine preventive maintenance or inspection.
- deadline requisition.** Emergency request for items required for the repair of a vehicle, weapon, or other item which cannot be used until the repairs are made.
- deadman.** An improvised anchor used in soft or frozen ground, as on an airstrip, consisting usually of a buried log or pole.
- dead reckoning.** (DR) Finding one's position by means of a compass and calculations based on speed, time elapsed, and direction from a known position. Dead reckoning is used for desert travel, coastwise shipping, and air navigation.
- dead space.** 1. A space within the range of a weapon but not covered by fire because of intervening obstacles, the nature of the ground, or the characteristics of the trajectory of the weapon. 2. A space or zone within range of a radio transmitter, but in which a signal is not received.
- dead storage.** Storage of vehicles, equipment, etc., for an indefinite time.
- dead time.** 1. Interval required from time of observation of target to instant at which gun may be fired. 2. In anti-aircraft artillery, the interval between the time of setting the fuze and the time of firing the round.
- DeBange obturator.** An obturator in which the gas pressure, due to firing, acts against a mushroom head which compresses a plastic pad. This causes the pad to expand radially against split rings, which in turn expand to make a gas tight seal against the breech recess wall, thus sealing the breech. See: **obturator.**
- decay.** The spontaneous disintegration of radioactive nuclei to a more stable form, generally accomplished by the emission of particles and/or gamma radiation. Decay also refers to the decrease in intensity of radioactivity with passage of time.
- decay curves.** Graph lines representing the decrease of radioactivity with the passage of time.
- decay factor.** A constant which is multiplied by the value of dose rate at one hour to give the rate at some other time.
- Decca.** A British hyperbolic navigation system similar in geometrical principle to loran.
- deceleration.** The action or process of velocity decrease; the rate of velocity decrease, often measured in g's.
- declassify.** To cancel the security classification of an item of classified material. The notification of holders of such material is part of the process. For classifications see: **defense information.**
- declination.** Angular difference in direction between true north and either magnetic north or grid north.

Hence, there are two declinations, magnetic declination and grid declination or gisement. See: **military grid system**.

decoder. *Electronic computers.* A device capable of ascertaining the significance or meaning of a group of signals and initiating a computer event based thereon; **matrix**.

decon (*abbr.*). 'Decontamination.'

decontamination. (*decon*) The act of removing chemical, biological, or radiological contamination from, or neutralizing it on, a person, object or area.

decoopering agent. Material included in a propelling charge, or material inserted in the chamber with the propelling charge, for the purpose of removing the coppering from the surface of the bore. Finely divided tin has been used for this purpose. See also: **coppering**.

decoy target. A device assembled from prefabricated materials, designed to simulate miscellaneous types of field equipment.*

dedud. Clearing areas by neutralization of explosive missiles.

deep penetration bomb. See: **bomb, deep penetration**.

def (*abbr.*). 'Defense.'

defeat of armor. Damage to the armor protection of armored vehicles or ships which will result in damage to personnel or materiel behind the armor. See: **armor defeating**.

Defense Department. The Department of Defense, which see.

defense information. Official information which requires protection in the interests of national defense, which is not common knowledge, and which would be of intelligence value to an enemy or potential enemy in the planning or waging of war against the United States or its allies. Classifications are given hereunder.

confidential information: Defense information or material the unauthorized disclosure of which could be prejudicial to the defense interests of the nation.

confidential—modified handling authorized information: Confidential information pertaining to combat or combat-related operations, actual or simulated, which will be adequately protected by procedures for transmission and safekeeping, less secure than those prescribed for confidential information.

secret information: Defense information or material the unauthorized disclosure of which could result in serious damage to the nation.

top secret information: Information or material the defense aspect of which is paramount, and the unauthorized disclosure of which could result in exceptionally grave damage to the nation. See also: **restricted data**.

DEFENSE SYSTEM, ANTI-AIRCRAFT. A grouping of electronic and/or mechanical equipments for detecting the presence of aircraft within an area defended by anti-aircraft guns. Receives intelligence concerning the movement of such aircraft; processes, displays, and evaluates tactical data and assigns specific gun batteries to specific hostile targets.*

defensive grenade. See: **grenade, fragmentation**.

defilade. 1. Protection from hostile ground observation and fire provided by an obstacle such as a hill, ridge, or bank. 2. Vertical distance by which a position is concealed from enemy observation. 3. To shield from enemy fire or observation by using natural or artificial obstacles.

definition. *Optics.* Sharpness of focus; distinctness of image.

deflagration. Very rapid combustion sometimes accompanied by flame, sparks and/or spattering of burning particles. Deflagration, although classed as an **explosion** (which see), generally implies the burning of a substance with self-contained oxygen so that the reaction zone advances into the unreacted material at less than the velocity of sound in the unreacted material. The term is often used to refer to the action of a high explosive projectile which upon impact with a target does not produce the usual effects of a high order detonation. Strictly speaking, the term low order detonation should be used to describe such a phenomenon if it is intended to connote a detonation at lower than the stable detonation velocity of the explosive. The term deflagration should be used if it is intended to connote a burning reaction.

deflection. *Gunnery.* 1. Horizontal clockwise angle between the axis of the bore and the line of sighting. 2. Setting on the scale to compensate for deflection as in sense 1.

deflection angle. 1. An angle that measures the departure of a moving object from its directed course. 2. The angle of a deflection shot in gunnery, measured between the line of sight to the target and the line of sight to the aiming point. Cf: **lead angle**.

deflection board. Instrument used in artillery for figuring azimuth or deflection corrected for wind, drift, and other factors; **gun deflection board**.

deflection change. Change in azimuth setting applying to all guns in a battery when the target moves, or when a shift is made from one target to another. Deflection change does not include the deflection difference, which allows for the difference in positions of the various guns firing at the same target.

deflection correction. *Gunnery.* Correction that must be applied to the azimuth or shift measured on a firing chart so that the line of fire will pass through the target.

deflection difference. The amount that a piece in a battery is traversed toward or away from a given piece (usually the base piece) to vary the width of the sheaf.

deflection error. 1. In artillery, the distance to the right or left of the target between the point aimed at and the burst of the projectile, or the mean point of a salvo burst. 2. In bombing, the distance between the point of impact or the mean point of impact and the center of the target measured at right angles from the line of the aircraft's approach.

deflection probable error. The directional error, caused by dispersion, which will be exceeded, as often as not, in an infinite number of rounds fired at a single

- deflection. It is one-eighth the width of the dispersion pattern at its greatest width. This value is given in the firing tables.
- deflection scale.** Scale on a sight, marked in mils or degrees, for applying corrections in deflection or for playing the piece in direction.
- defoliant.** A biological agent which destroys the leaves of green plants.
- defuze.** To remove the fuze from a munition.
- DEGN** (*abbr.*). 'Diethyleneglycol dinitrate' (propellant additive).
- DEGREASER.** A device designed to clean grease and foreign matter from mechanical parts and like items, usually metallic, by exposing them to vaporized or liquid solvent solutions confined in a tank or similar vessel. It usually includes a circulating pump, provisions for heating, and may include an auxiliary solvent supply tank and/or provisions for solvent spray.*
- degressive granulation.** Propellant granulation in which the surface area of a grain decreases during burning. The burning of a propellant with degressive granulation is termed degressive burning or sometimes regressive burning. Cf: **neutral granulation**; **progressive granulation**.
- degressive shape.** Any geometrical form of a propellant grain, such that its surface area decreases during burning. See: **degressive granulation**.
- DEHUMIDIFIER PACK.** A unit consisting of a storage case containing two or more metal containers each complete with desiccant. Each container with desiccant is suitable for the static dehumidification of small inclosed spaces and can be readily activated.*
- delay.** A mechanical, electronic, or explosive train component which introduces a controlled time delay in some phase of the arming or functioning of a fuze mechanism. See also: **delay, arming**; **delay, functioning**.
- delay action bomb.** See: **bomb, delayed action**.
- delay action fuze.** See: **fuze, delay**.
- delay, arming.** 1. The interval expressed in time or distance between the instant a piece of ammunition carrying the fuze is launched and the instant the fuze becomes armed. 2. The time interval required for the arming processes to be completed in a non-launched piece of ammunition. See also: **delay**.
- delayed action bomb.** See: **bomb, delayed action**.
- delayed contact fire.** Firing system arranged to explode a mine at a set time after it has been touched or disturbed.
- delay element.** *Cartridge actuated devices.* A component which provides a specified delay between actuation of the CAD and ignition of the propellant.
- delayer.** A substance mixed with the propellant of a solid fuel rocket to decrease the rate of combustion.
- delay, functioning.** The interval expressed in time or distance between initiation of the fuze and detonation of the bursting charge. See also: **delay**.
- delay fuze (delayed fuze).** See: **fuze, delay**.
- delay-line memory.** *Electronic computers.* A type of circulating memory in which a delay line is the major element in the circulating path. See: **storage, circulating**.
- delay-line register.** *Electronic computers.* An acoustic or electric delay-line, usually one or an integral number of words long, together with input, output, and circulation circuits.
- DELAY RELEASE ASSEMBLY.** An item which releases a retardant device on a bomb, to reduce the velocity of the bomb.
- delay train.** An explosive train incorporating a delay. See also: **delay**; **explosive train**.
- deliberate fire.** Fire which is conducted at a rate intentionally less than the normal rate of fire for the purpose of applying adjustment corrections between each round or salvo, for tactical reasons, or for conserving ammunition; slow fire.
- delivery error.** *Atomic explosions.* The dispersion of burst points around a desired burst point due to ballistic characteristics of the projectile, atmospheric conditions, and other factors.
- delivery system.** The means of delivering atomic weapons to the target.
- delta network.** *Network topology.* A set of three branches connected in series to form a mesh.
- delta wing.** An airplane or wing design in which the sweptback wings, looked at from below or above, give the appearance of an isosceles triangle, the trailing edges of the wings forming one straight line to become the base of the triangle.
The delta wing is a feature of certain transonic airplanes. The delta wing is not to be confused with the flying wing.
- De Marre formula.** A formula expressing the relationship between projectile characteristics and armor plate penetration capabilities.
- demilitarization.** 1. Taking away all military organization and installations. 2. Disassembly, destruction, or any other action which renders munitions, weapons, and other materiel which is lethal, hazardous, classified, or of a specialized nature, harmless and ineffectual for military purposes.
- demo** (*abbr.*). 'Demolition.'
- demodulation.** *Receivers.* The process of recovering the modulating wave from a modulated carrier.
- demolition.** (demo) (dml) Act or process of demolishing; it may be accomplished by the use of explosives, fire, hand tools, etc.
- demolition bomb.** See: **BOMB, GENERAL PURPOSE**.
- demolition duty.** A hazardous military duty involving the demolition or disarming of explosives or the destruction of objects or obstacles by detonating planted or fixed explosives.
- demolition kit.** Any of several groups of items of an explosive nature, with the necessary nonexplosive accessories and tools, with specially designed containers and carrying attachments, to enable efficient performance of particularly designated demolition tasks. Example: **DEMOLITION KIT, BLASTING**.

DEMOLITION KIT, BANGALORE TORPEDO. A group of items consisting of a number of Bangalore torpedoes with connecting sleeves and a nose sleeve to facilitate assembly of an explosive unit of varying length. See also: **Bangalore torpedo**.*

DEMOLITION KIT, BLASTING. A collection of items of an explosive nature and the necessary non-explosive accessories and tools, with specially designed containers and carrying attachments, to enable the accomplishment of suitable demolition assignments by personnel groups of various sizes.

DEMOLITION KIT, PROJECTED CHARGE. A group of items including demolition charges designed for assembly into a device to be positioned by an external force for clearing a path through a mine field.* Early designs termed 'snake, demolition.' See also: **CHARGE, DEMOLITION**; **snake, demolition**.

DEMOLITION KIT, PROJECTED CHARGE, INERT. A DEMOLITION KIT, PROJECTED CHARGE with components filled with simulated explosive used for training purposes.*

demolition squad. *Specif.* A civil defense team responsible for the demolition of hazardous walls, etc., resulting from fire or bombing raids. Cf: **explosive ordnance disposal unit**; **underwater demolition team**.

demonstration ammunition. Ammunition authorized for use in approved exhibitions of firepower.

DEMULTIPLEXER. An item designed to decompose two or more simultaneous intelligence signals for recovering the intelligence received from a single signal transmission facility, the intelligence having been previously combined by a compatible multiplexer. See also: **MULTIPLEXER**.*

densitometer. Instrument used to measure the amount of darkening of film badges in order to determine the radiation dosage received by the wearer.

density. 1. An index of the mass of air that is displaced by a projectile in flight. It varies with altitude, decreasing as the altitude increases. In practice, the density used is the ballistic density. 2. *Explosives.* Mass per unit volume.

density bombing. Bombing done by dropping a given tonnage of bombs onto an area, in order to make certain of striking particular targets within the area. Cf: **area bombing**; **precision bombing**.

density of loading. The weight of propelling charge per unit volume of the chamber, usually expressed in grams per cubic centimeter. It may be taken as the ratio of the weight of the propelling charge to the weight of the volume of pure water at a temperature of 39.2° F., that would fill the chamber behind the seated projectile. Cf: **loading density**.

dep (*abbr.*). 'Depot.'

Department of Defense. (DOD) 1. The entire Military Establishment of the United States. 2. A main subdivision of the executive branch of the Federal Government at the seat of government in Washington, D. C., charged with the administration, management, and policy determination of the entire Military Establishment of the US.

Under the National Security Act of 1947, the Department of Defense (sense 1) was designated the 'National Military Establishment.' It was redesignated the 'Department of Defense' in 1949. The Department of Defense includes the Department of the Air Force, the Department of the Army, the Department of the Navy, and such military establishments and agencies as are provided for by law.

Department of Defense Ammunition Code. (DOD Ammunition Code) An eight character number, assigned to generic descriptions applicable to ammunition and explosive items of supply. Such items are identified under the Federal Catalog System in Federal Supply Classification Group 13. The first four numbers in the code, for example, 1320, constitute the FSC code number assigned to the items covered by the generic description. The second part consists of a letter and three numerals, for example, D548, assigned to a generic description within the FSC class and is separated from the FSC code number by a hyphen. The letter and three numerals, e.g., D548 is known as the **Department of Defense Identification Code** (which see). Each different generic description, consisting of the approved item name, plus the common characteristics of one or more specific items of supply which are functionally interchangeable, is assigned a different DOD Ammunition Code number. The DOD Ammunition Code numbers are centrally assigned by the Cataloging Division, Office of the Assistant Secretary of Defense (Supply and Logistics), and are designed as an aid in supply management for worldwide stock status, requirements, and for requisitioning (except where more specific items provided by Federal Stock numbers are required).

Examples of generic descriptions covering more than one item with the same DOD Ammunition Code number follow:

DOD Ammunition Code: 1325-E500

BOMB, GENERAL PURPOSE: 1000 lb, amatol, M44.

BOMB, GENERAL PURPOSE: 1000 lb, TNT, M44.

BOMB, GENERAL PURPOSE: 1000 lb, amatol, M44, modified (w/o British lug).

DOD Ammunition Code: 1320-D540

CHARGE, PROPELLING, 155 MILLIMETER: M3 packed 2 per fiber container, M68A1.

CHARGE, PROPELLING, 155 MILLIMETER: M3 packed 2 per metal container, M14.

Department of Defense Identification Code. (DODIC) Code consisting of a letter and three digits. Used as a suffix to the Federal Stock Number as an identification code for items. Identical codes signify interchangeable items for issue and use. For requisitioning of ammunition items the 4-digit class code number from the Federal Supply Classification, followed by a hyphen and the DODIC is normally employed. This combination is known as the **Department of Defense Ammunition Code** (which see).

Department of the Air Force. (DAF) One of the three departments of the Department of Defense.

It includes the Department of the Air Force at the seat of government and all field headquarters, forces, reserve components, installations, activities, and functions under the control or supervision of the Department of the Air Force.

Department of the Army. (DA) Central executive part of the Army Establishment at the seat of government. It exercises directive and supervisory functions over the entire Army Establishment. It is not restricted to agencies and personnel located in the District of Columbia, but includes dispersed agencies and personnel performing 'departmental' or 'national headquarters' functions, as distinguished from 'field' or 'local' functions.

Department of the Navy. (DN) One of the three departments of the Department of Defense that includes the Department of the Navy at the seat of government; the headquarters, United States Marine Corps; the entire operating forces of the United States Navy, including naval aviation, and of the United States Marine Corps, including the Reserve components of such forces; all field activities, headquarters, forces, bases, installations, activities, and functions under the control or supervision of the Department of the Navy; and the United States Coast Guard when operating as a part of the Navy pursuant to law.

dependent line of sighting. A line of sighting system in which any movement of the elevating mechanism moves the cannon and the line of sighting simultaneously.

dependent recoil system. A recoil mechanism (which see) that has a recuperator mechanism which is dependent upon it, i.e., has a connecting pipe between the recoil and recuperator or counterrecoil cylinders. Cf: **independent recoil system.**

dependent recuperator. A counterrecoil mechanism in which there is a connection between the counterrecoil cylinder and the recoil brake cylinder. Cf: **independent recuperator.**

depot. (dep) 1. An establishment for storing supplies or for maintaining equipment, or for any combination of these activities. 2. The installation for this establishment.

depot maintenance. The maintenance, repair, or modification given equipment requiring major overhaul or complete rebuilding of certain parts, and usually provided for only at a depot. Formerly called 'fourth-echelon maintenance.'

The more extensive shop equipment and the higher technical skill of personnel that enter into depot maintenance distinguish it from field maintenance. See: **maintenance.**

depot maintenance shop. Communications zone or zone of interior installation where materiel is repaired which requires a rebuild of subassemblies, assemblies, and/or end items.

depot overhaul. An overhaul carried out at a depot.

depress. Decrease the angle of elevation of a gun, launcher, optical instrument, or the like.

depression angle. The vertical angle between the

horizontal and a line or object pointed downward, as the angle formed by the depression of a gun barrel below the horizontal.

depth bomb. (DB) See: **BOMB, DEPTH.**

depth charge. See: **CHARGE, DEPTH.**

DEPTH CHARGE PISTOL. An item designed to properly position a detonator in relation to a booster within a depth charge.*

derivatives, lateral resistance. Resistance derivatives expressing the variation of moments and forces owing to small changes in the lateral, yawing, and rolling velocities of an aircraft or missile.

derivatives, longitudinal resistance. Resistance derivatives expressing the variation of moments and forces owing to small changes in the longitudinal, normal, and pitching velocities of an aircraft or missile.

derivatives, rotary resistance. Resistance derivatives expressing the variation of moments and forces owing to small changes in the rotational velocities of an aircraft or missile.

derivatives, stability. Quantities expressing the variation of the forces and moments on aircraft owing to disturbance of steady motion. They form the experimental basis of the theory of stability, and from them the periods and clamping factors of aircraft can be calculated. In the general case there are 18 translatory and 18 rotary derivatives.

derivatives, translatory resistance. Resistance derivatives expressing the variations of moments and forces owing to small changes in the translational velocities of an aircraft or missile.

derrick. An apparatus consisting of a mast or equivalent members, held at the top by guys or braces, with or without a boom, for use with a hoisting mechanism and operating ropes or wire ropes. See also: **CRANE** (as modified).*

descending branch. That portion of a trajectory between the summit and a point beyond the summit where the trajectory terminates, either by impact or air burst. On this branch the projectile falls and its altitude constantly decreases. Cf: **ascending branch.**

design study. The initial study and layout of the system, major combination, or item. It concludes with the preparation of drawings adequate for the initiation of component design and/or the fabrication of a mockup.

desired ground zero. (DGZ) For a surface burst, the point on the earth's surface where atomic detonation is desired. For an air burst or underground burst, the point is on the earth's surface directly below or directly above the desired point of detonation.

destroyed. Of aircraft, materiel, installations, or the like: Ruined beyond repair and unfit for further military use.

An enemy aircraft is officially considered destroyed (a) when it is seen to hit the ground or sea, (b) when it is seen to break up in the air or descend in flames, (c) when it is forced to descend and is captured, or (d) when it is single-seated and abandoned by bailout.

destruction. The action of so damaging a person, force, or thing that, for practical purposes, it can no longer function in its normal or intended purpose, and cannot readily be restored to its condition before damage was done to it.

destruction fire. Artillery fire delivered for the sole purpose of destroying material objects.

DESTRUCTOR, EXPLOSIVE. A cylindrical metallic item containing explosive components for destruction of material by explosion.*

destructor holder. See: **HOLDER, DESTRUCTOR.***

detail-strip. To disassemble completely a machine gun, cannon, or the like. Cf: **field-strip.**

DETECTING SET, MINE. A complete set for the detection and indication of metallic and/or non-metallic mines buried in the earth, submerged in water, or on the surface of land or water within the operating range of the device.*

detection. Receivers. See: **demodulation.**

detector. 1. Chemical, electrical, or mechanical device for detection and identification of chemical agents, biological agents, or radioactive materials. 2. In radio, the receiver stage at which demodulation takes place.

DETECTOR, CHEMICAL AGENT. A chemical used to detect military casualty-producing agents.*

detector, infrared. Thermal device for observing and measuring infrared radiation, such as the bolometer, radio-micrometer, thermopile, pneumatic cell, photocell, photographic plate, and photoconductive cell.

DETECTOR KIT, CHEMICAL AGENT. A collection of chemical materials and testing equipment for the purpose of determining the presence and identity of toxic chemical warfare agents.*

detector, mine. A device, usually electrical or magnetic, used to locate mines.

DETECTOR, PRESSURE, UNDERWATER MINE. An item designed to provide a means for actuating a firing mechanism in an underwater mine from the effects of pressure changes.*

DETECTOR, RADIAC. A device consisting of a permanent or replaceable element which is sensitive to radioactivity or free nuclear particles, together with its associated circuits and housing, which produces a reaction that can be interpreted or measured by other components. Does not include meters and indicators.*

detergent oils. Lubricating oils to which has been added a compound to prevent the formation of gums, varnishes, etc., in internal combustion engines.

deteriorating supplies. Those items that may reasonably be expected to become unusable within one or two years, whether used or not.

determinate error. Error of such a kind that its cause can be found, and its effect allowed for.

determinate error of the piece. Distance from the center of impact to the target.

deterrent. A material sometimes applied as a coating on propellant grains to reduce the initial rate of burning. Distinguished from an inhibitor, which

prevents burning on the coated surfaces. Cf: **inhibitor.**

detonate. To be changed by exothermic chemical reaction usually from a solid or liquid to a gas with such rapidity that the rate of advance of the reaction zone into the unreacted material exceeds the velocity of sound in the unreacted material; that is, the advancing reaction zone is preceded by a shock wave. See also: **detonation.**

detonating agent. See: **primary high explosive.**

detonating charge. See: **charge, detonating.**

detonating cord. See: **CORD, DETONATING.**

detonating cord assembly, guided missile. See: **EXPLOSIVE HARNESS ASSEMBLY, GUIDED MISSILE.**

detonating explosive. See: **high explosive.**

detonating fuze. See: **fuze, detonating.**

detonating net. Network of detonating cord that is interlaced in a mesh design; Primacord net. Detonating nets are used for clearing paths through mine fields by exploding the mines over which the nets are placed and detonated. See also: **CORD, DETONATING.**

detonation. 1. An exothermic chemical reaction that propagates with such rapidity that the rate of advance of the reaction zone into the unreacted material exceeds the velocity of sound in the unreacted material, that is, the advancing reaction zone is preceded by a shock wave. A detonation is classed as an **explosion**, which see. The rate of advance of the reaction zone is termed *detonation rate* or *detonation velocity*. When this rate of advance attains such a value that it will continue without diminution through the unreacted material, it is termed the *stable detonation velocity*. The exact value of this term is dependent upon a number of factors, principally the chemical and physical properties of the material. When the detonation rate is equal to or greater than the stable detonation velocity of the explosive, the reaction is termed a *high-order detonation*. When the detonation rate is lower than the stable detonation velocity of the explosive, the reaction is termed a *low-order detonation*. 2. The instantaneous and abnormal combustion of an unburned part of fuel mixture in the cylinder of an engine.

In sense 2, when detonation occurs the sudden abnormal pressure inside the cylinder knocks rather than thrusts the piston down.

detonation front. The reaction zone of a detonation (which see).

detonation rate. See: **detonation.**

detonation suppressant. See: **fuel dope.**

detonation velocity. See: **detonation.**

detonation wave. The shock wave which precedes the advancing reaction zone in a high-order detonation. See also: **detonation.**

detonator. 1. An explosive train component which can be activated by either a nonexplosive impulse or the action of a primer and is capable of reliably initiating high-order detonation in a subsequent high explosive

component of train. When activated by a nonexplosive impulse, a detonator includes the function of a primer. In general, detonators are classified in accordance with the method of initiation, such as percussion, stab, electric, flash, etc. 2. An explosive charge placed in certain equipment and set to destroy the equipment under certain conditions. Preferred term in this sense is **DESTRUCTOR, EXPLOSIVE**.

detonator, dummy. See: **DUMMY DETONATOR**.

DETONATOR, ELECTRIC. An item consisting of electrical leads and explosive elements designed to detonate an explosive charge.* See also: **detonator**.

DETONATOR, FRICTION. An item consisting of a blasting cap, fuse and a pull type fuse lighter for detonating an explosive charge. See also: **detonator**.

DETONATOR KIT, CONCUSSION. A group of items including a blasting cap and a mechanical firing device designed to be actuated by the concussion wave of a nearby blast. It may be used to detonate several charges simultaneously without interconnecting the charges with wires or detonating cord.*

DETONATOR, PERCUSSION. An item consisting of a blasting cap and explosive elements designed to detonate an explosive charge.* See also: **detonator**.

detonator safety. A fuze is said to have detonator safety or to be detonator safe when functioning of the detonator cannot initiate subsequent explosive train components. See also: **fuze safety**.

DETONATOR, STAB. An explosive device which is designed to initiate the detonation wave in an explosive train by the stabbing action of a **PIN, FIRING**.*

Detroit Arsenal. (DA) Ordnance Corps installation, forming part of the Ordnance Tank-Automotive Command, located at Center Line, Michigan. Responsible for development of tank-automotive materiel, armor and land locomotion.

Detroit Ordnance District. One of the eleven districts into which the United States is divided for the purposes of industrial mobilization, procurement, contract negotiation and administration, etc., by the Ordnance Corps. Embraces the lower peninsula of the State of Michigan. The main office is located in Detroit, Michigan.

deuterium. The hydrogen isotope of mass number 2 (symbol H^2 or D); heavy hydrogen. Hence, *deuterium bomb*. See: **fusion, nuclear**.

dev (abbr). 'Develop; development.'

develop. (dev) *Specif.* 1. To work out and extend the theoretical, practical, and useful applications of a basic *design, idea*, or scientific *discovery*. 2. To design, build, modify, or improve the prototype of a weapon or the like as determined by a basic idea or concept.

developed armament probable error. (DAPE) The probable armament error as computed from a finite series of shots. It is the average armament error of a particular series of shots multiplied by 0.845.

developed muzzle velocity. The actual muzzle velocity produced by any gun.

developing agency, Army. The technical services and any other agency within the Department of the Army authorized to engage in research and development work.

development. (dev) *Specif.* The process or activity of developing a basic design, idea, or a piece of military equipment. The development of a piece of military equipment includes construction and testing of experimental models.

development period. The time interval or period required to develop a new item of Ordnance materiel.

development type. See: **type classification**.

deviation. 1. In frequency modulation, the amount the carrier increases or decreases when modulated. 2. In statistics, the amount of difference between a value and the value of the standard. 3. Distance by which a point of impact or burst misses the target. 4. Any variance from the requirements of drawings, specifications, or other technical data applicable to production of items which precludes the normal acceptance of the item.

deviation distortion. Distortion in an FM receiver caused by inadequate bandwidth, inadequate amplitude-modulation rejection, or inadequate discriminator linearity.

deviation, frequency. See: **frequency deviation**.

deviation sensitivity. *Frequency modulation.* The least frequency deviation that produces a specified output power.

DEW (abbr). 'Distant early warning.'

Dew line. [From **DEW (abbr)**.] A line of radar stations at about the 70th parallel on the North American Continent, financed by the United States Government but undertaken in cooperation with the Canadian Government.

DF (abbr). 'Direction finder.'

DGZ (abbr). 'Desired ground zero.'

DI (abbr). 'Dark ignition.'

dialyte. A type of compound lens in which the inner surfaces of the two elements are ground to different curvatures to correct for aberrations and the dissimilar faces cannot be cemented together.

diam (abbr). 'Diameter.'

Diamondback. Navy air-to-air missile. Developmental.

Diamond Ordnance Fuze Laboratories. (DOFL) Ordnance Corps installation located in Washington, D. C. Has responsibility for research and development procurement and associated activities for proximity, electronic and electric fuzes and related items.

diaphragm. *Optics.* A flanged or plain ring with a limited aperture placed in an optical system at any of several points to cut off marginal rays of light not essential to the field of view. Diaphragms are used as: *field stops*, to limit the field of view to that portion which is fully illuminated; *aperture stops*, to limit the aperture of light-gathering power of the instrument; and *antiglare diaphragms*, to eliminate reflections from the sides of the tube and consequent glare in the field of view. Lens cells or the sides

- of the tube may act as diaphragms. The rays eliminated by diaphragms are those which would cause aberrations or glare by reflection inside the instrument.
- diazodinitrophenol.** (DDNP) A primary high explosive. Greenish-yellow to brown crystals in the form for military use. See also: **primary high explosive.**
- dibutylphthalate.** (DBT) An additive used in propellant manufacture to assist in gelatinizing the nitrocellulose. It is nonexplosive and contributes to reduction of muzzle flash.
- Dickson Gun Plant.** Ordnance Corps field installation located at Houston, Texas.
- dielectric.** A nonconducting substance or material through which, however, induction, magnetic lines of force, or electrostatic lines of force may pass. Air, celluloid, porcelain, glass, mica, and wood are dielectrics.
- dielectric antenna.** An antenna which employs a dielectric as the major component in producing the required radiation pattern.
- diesel engine.** See: **ENGINE, DIESEL.**
- diesel fuel.** See: **FUEL OIL, DIESEL.**
- diethyleneglycol dinitrate.** (DEGN) Liquid aliphatic nitrate used in propellant compositions by the Germans during World War II. Propellants based on DEGN and nitrocellulose develop relatively low temperatures and cause little erosion of guns, but are unduly volatile.
- differential analyzer.** An electric analog computer used esp. for the solution of problems in differential calculus.
- differential ballistic wind.** In bombing, a hypothetical wind equal to the difference in velocity between the ballistic wind and the actual wind at release altitude.
- differential effects.** The effects upon the elements of the trajectory due to variations from standard conditions.
- differential gain control.** (also called 'gain time control' or 'sensitivity time control.') A device for altering the gain of a radio receiver at the times when various signals are expected, in order to reduce the discrepancy in amplitude between the signals at the output of the receiver.
- differentiating circuit.** A circuit which produces an output voltage substantially in proportion to the rate of change of the input voltage or current.
- differentiator.** *Electronic computers.* A device whose output function is proportional to a derivative of its input function with respect to one or more variables.
- diffracted wave.** *Electroacoustics.* When a wave in a medium of certain propagation characteristics is incident upon a discontinuity or a second medium, the diffracted wave is the wave component that results in the first medium in addition to the incident wave and waves corresponding to the reflected rays of geometrical optics.
- diffraction.** *Electroacoustics.* That process which produces a diffracted wave.
- diffuser.** A device for diffusing a fluid; *specif.,* a duct or vane designed to convey air into a manifold or combustion chamber while reducing its velocity and increasing its static pressure. Hence, *diffuser efficiency, diffuser vane.*
- diffuser, area ratio of.** The ratio of the outlet cross-sectional area of a ramjet diffuser to the inlet cross-sectional area, commonly expressed as 2/1, 2.5/1, 3/1, etc.
- diffuser efficiency.** 1. The ratio of the actual pressure increase realized by the diffuser to the theoretical pressure increase realized in an isentropic process. 2. The ratio of the stagnation pressures after and before the diffuser. 3. The ratio of actual change in enthalpy to the ideal change in enthalpy for passage from ambient to diffuser pressure.
- diffuser, Kantrowitz-Donaldson.** A type of supersonic diffuser which first contracts to a throat and then expands. Under proper operating conditions a normal shock occurs near the throat at decreased gas-stream velocity, thereby decreasing the shock-wave strength and the pressure losses which would occur if the normal shock had occurred at the lip of the diffuser.
- diffuser, Oswatitsch or Ferri.** A type of supersonic diffuser for ramjet, with an inner body projecting forward of the diffuser lip, designed to permit pressures to be raised gradually through a series of conical shocks. The pressure recovery possible to this type of diffuser operating at high Mach numbers is considerably greater than could be obtained by a diffuser designed for single normal shock.
- diffusion.** *Optics.* The scattering of light by reflection or transmission. Diffuse reflection results when light strikes an irregular surface such as a frosted window or the surface of a frosted or coated light bulb. When light is diffused, no definite image is formed.
- digit.** *Electronic computers.* One of the n symbols of integral value ranging from 0 to $n-1$ inclusive in a scale of numbering of base n , e.g., one of the ten decimal digits, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.
- digital.** The quality of utilizing numbers in a given scale of notation to represent all the quantities that occur in a problem or a calculation.
- digital computer.** See: **computer, digital.**
- digit, binary.** See: **binary digit.**
- digit, sign.** See: **sign digit.**
- dihedral.** The upward or downward inclination of an airplane's wing or other supporting surface in respect to the horizontal; in some contexts, the upward inclination only; a dihedral angle.
- dihedral angle.** The angle, esp. an upward angle, between the plane of the wing or other surface and a horizontal plane at the root of the wing or other surface.
- Ding Dong.** Name applied to an Air Force air-to-air guided missile. Now termed **Genie**, which see.
- dinitrotoluene.** (DNT) A high explosive, formed by nitration of toluene. A lower degree of nitration

than that attained in producing trinitrotoluene (TNT). Used in the formulation of propellants, in which it acts as a gelatinizing and moisture-proofing agent and contributes to the ballistic potential.

dioppter. A unit of optical measurement which expresses the refractive power of a lens or prism. In a lens or lens system, it is equivalent to the reciprocal of the focal length in meters.

dioppter movement. A term applied to adjustment of the eyepiece of an instrument to provide accommodation for eyesight variations of individual observers.

dioppter scale. A scale usually found on the focusing nut of the eyepiece of an optical instrument. It measures the change in refracting power of the eyepiece, in diopters, to introduce a correction to compensate for the nearsightedness or farsightedness of the individual observer. It permits presetting of the instrument if the observer knows his dioppter correction.

diphenylamine. (DPA) An additive used in propellants to increase the storage life by neutralizing the acid products formed upon decomposition of the nitrocellulose.

diphosgene. (DP) Trichloromethyl chloroformate, one of the choking gases.

direct bombing. Bombing by aiming at the target, as distinguished from offset bombing.

direct channel. A channel for direct communication.

direct command procedure. Procedure for conduct of indirect fire in which the observer sends corrections directly to the weapon. Used primarily with self-propelled light antiaircraft artillery weapons.

direct fire. Fire delivered on a target in which the sights of a weapon are brought directly on the target.

direct fire sights. 1. Sights which permit laying directly on the target as distinguished from those used to lay on an aiming point. 2. Sights used with anti-aircraft guns when the director is not available.

direct hit. A hit directly upon the target.

directing gun. See: base piece.

directing point. Point of known location normally at the geometric center of the guns of an antiaircraft artillery battery for which the firing data are computed.

directional antenna. An antenna which radiates or receives radio waves more effectively in or from some directions than others.

directional beam. A stream of radio or radar impulses beamed in a given direction.

directional homing. The procedure of following a path such that the objective is maintained at a constant relative bearing.

directional microphone. A microphone the response of which varies significantly with the direction of sound incidence.

directional stability. The stability (which see, sense 1 a) of an aircraft, projectile, or the like against yawing.

direction finder. (DF) See: radio direction finder.

direct laying. Laying in which the sights of the weapon are aligned directly on the target.

direct observation. Observation by direct vision, aided by instruments such as field glasses or telescopes, instead of a study of photographs of terrain, etc., which is indirect observation.

director. 1. Electromechanical equipment used to track a moving target in azimuth and angular height and which, with the addition of other necessary information from an outside source, such as a radar set or a range finder, continuously computes firing data and transmits them to the guns. 2. Parasitic antenna located in front of the radiating antenna so that radiation will add in the forward direction.

DIRECTOR, ANTI-AIRCRAFT WEAPONS. A collection of major electronic, optical, and mechanical components and/or items specifically designed to automatically acquire, identify, and track a target. It simultaneously computes and transmits data for directing the fire of antiaircraft artillery guns and missiles.*

DIRECTOR-COMPUTER GROUP, GUIDED MISSILE. A group specifically designed to be used in a guided missile remote control system, which provides directing and computing facilities for a guided missile in flight. Excludes COMPUTER-TRACKING GROUP, RADAR. See also: COMPUTER GROUP, GUIDED MISSILE; DIRECTOR STATION, GUIDED MISSILE, TRAILER MOUNTED and DIRECTOR STATION GROUP, GUIDED MISSILE.*

director, electrical. An electrical device for tracking a moving target and, by using information from radar or from a range finder, for computing firing data.

director-sight system. A sighting system used on airborne flexible guns in which the gunner has direct control of the tracking line (line of aim) and indirect control of the gun or guns.

DIRECTOR STATION GROUP, GUIDED MISSILE. A group and a subdivision of a DIRECTOR STATION, GUIDED MISSILE, TRAILER MOUNTED, which is not capable of performing a complete operating function but when used with other groups provide facilities for directing by remote control a guided missile in flight. See also: DIRECTOR-COMPUTER GROUP, GUIDED MISSILE and DIRECTOR STATION, GUIDED MISSILE, TRAILER MOUNTED.*

DIRECTOR STATION, GUIDED MISSILE, TRAILER MOUNTED. A collection of major electronic components and/or items specifically designed to provide a guided missile battery commander and other operating personnel of a RADAR COURSE DIRECTING CENTRAL with circuits, controls, computer and radar data displays, communication facilities, plotting boards and the like, for directing by remote control azimuth, elevation and range of a guided missile in flight. May also contain facilities for furnishing burst command signals to a missile. See also: DIRECTOR STATION GROUP, GUIDED MISSILE and DIRECTOR-COMPUTER GROUP, GUIDED MISSILE.*

- director-type computer.** A gunsight computer used in the director-sight system (which see), which, in response to the gunner's action of tracking, computes the angle at which the gun or guns must be fired in order to hit a target.
- director-type fire control.** The control of fire by use of a director-type computer.
- direct pointing.** Pointing a piece in a direction or in both range and direction by means of a sight directed at the target.
- direct radiator loudspeaker.** A loudspeaker in which the radiating element acts directly on the air.
- disappearing carriage.** Type of fixed mount in which a balancing mechanism lifts the major caliber cannon to a position above its protective parapet for the act of firing, after which the cannon again 'disappears' behind the parapet. Formerly used in seacoast defense, now considered obsolete because of its inability to fire at high angles and the lack of advantage of the 'disappearing' feature against bombs and other missiles with high angles of fall.
- disappearing target.** Target that is exposed to the firer's view for a short time. Bobbing targets, and targets that are raised from target pits for short periods of time, are disappearing targets.
- disarm.** To remove the detonating device or fuze of a bomb, mine, or other piece of explosive ordnance, or otherwise render it incapable of exploding in its usual manner. See also: deactivate; defuze.
- discarding petal.** A part of a discarding sabot in which the sabot (which see) is composed of a base and attached pieces extending from it. These pieces, called 'petals,' surround the core. They peel back under centrifugal and aerodynamic forces and are discarded just in front of a gun muzzle.
- discarding sabot.** See: sabot.
- disc, blowout.** A mechanism, consisting generally of a thin metal diaphragm, sometimes installed in a rocket motor as a safety measure against excess gas pressure.
- discharger, rifle grenade.** See: LAUNCHER, GRENADE.
- DISCHARGER, SMOKE PUFF.** A device designed to ignite a powder charge which produces a puff of smoke for artillery training purposes.*
- discriminator.** A device used to convert input frequency changes to proportional output voltages. For example, in a radio receiver, that stage which converts the frequency-modulated signals directly to audio-frequency signals.
- DISCRIMINATOR, MAGNETIC, GUIDED MISSILE.** An item consisting of magnetic amplifier(s) and a transformer, specifically designed to sense polarity and magnitude of coded impulses for the purpose of producing output control and signal voltages, which actuates rudder movements in a guided missile for final range correction. May include components, such as resistors, capacitors, rectifiers and chokes.*
- disemplace.** Take out of position; remove a weapon, usually artillery, from a prepared firing position.
- dish, radar.** The parabolic reflector which is part of certain radar antennas.
- disintegrating belt.** See: belt, link.
- disk, aiming.** Circular, flat piece of cardboard, painted tin, or other material, with a bull's-eye and pinhole in the center, and a handle. An aiming disk is used for instruction in sighting and aiming.
- DISK, MASTER, STANDARD.** A precision master reference tool used as a standard for setting micrometer calipers and snap gages; also in setting up and checking comparators. It consists of a flat steel disk, or a cylinder, precision ground and lapped to size.*
- disk recorder.** *Electroacoustics.* A mechanical recorder in which the recording medium has the geometry of a disk.
- DISK, TARGET MARKER.** An item used in connection with target marking to indicate, by signalling, the value of a hit upon a target as determined by the location of a hit. It is also used to indicate target misses. It is usually colored on both faces, each face being of a different color and/or design. It is provided with securing holes for attaching to a hoisting and lowering staff. When assembled with staff it becomes a target marker.* See: MARKER, TARGET.
- DISK, TARGET SPOTTER.** An item designed to be used in connection with the spotting of the exact location of shot holes on targets. It is usually colored on both faces, each face being of a different color. It is provided with a hole in the center for insertion of spotter spindle. When assembled with spindle it becomes a target spotter.*
- dismount.** To remove a weapon or piece of equipment from its setting, mount, or carriage.
- DISPENSER, COUNTERMEASURES CHAFF.** An item specifically designed to eject portioned quantities of chaff from an aircraft for use as a countermeasure against enemy radar signals.*
- DISPENSING SET, COUNTERMEASURES CHAFF.** A complete set to provide facilities for ejecting portioned quantities of metallic chaff from an aircraft for use as a countermeasure against enemy radar signals.*
- dispersal.** The spreading out of equipment, supplies, or personnel, esp. for protection against enemy action; the practice of building or establishing industrial plants, government offices, or the like, in separated areas, to reduce vulnerability to enemy attack.
- dispersion.** 1. The scattering of shots fired on a target by the same gun or group of guns. 2. The scattering of bombs dropped under approximately the same conditions upon a target; the pattern of bomb impacts resulting from this. 3. Dispersal. 4. In chemical warfare, the dissemination of agents in liquid or aerosol form from bombs and spray tanks. 5. *Optics.* The separation of a beam of so-called 'white light' into its component colors, as in passing through a prism. See: spectrum.
- dispersion diagram.** A diagram made up by superimposing the dispersion ladder for direction on the dispersion ladder for range and indicating in each

resulting rectangle the percentage of shots expected to fall therein.

dispersion error. Chance variation in a series of shots even though firing conditions are kept as constant as possible. For practical purposes the dispersion error of a particular shot is considered the distance from the point of impact or burst of that shot to the center of impact or burst.

dispersion ladder. Table that shows the probable distribution of a succession of shots made with the same firing data. A dispersion ladder consists of a diagram made up of eight zones, in each one of which is shown the percentage of shots which may be expected to fall within it. It may be made for direction (deflection) or for range. See also: **dispersion diagram.**

dispersion zone. The area over which shots scatter when fired with the same sight setting.

distance-measuring equipment. (DME) Radar navigation equipment that determines the distance of an interrogator from a transponder by measuring the time of transmission to and from the transponder.

distance piece. Item which holds the propelling charge in place (around the primer) in the cartridge case of some types of ammunition, e.g., in separated ammunition it maintains the proper distance between the mouth plug and the wad which covers the propelling charge. It is usually made of a rectangular cardboard sheet, folded into a triangular shape and cut to length. See also: **distance wadding; wad.**

Distances, American Table of. See: **American Table of Distances.**

distance wadding. In fixed ammunition, inert material such as cardboard, placed in the cartridge case to occupy the excess volume and to keep the propellant charge back around the primer, when the capacity of the case is materially greater than the volume of the propellant charge. See also: **distance piece.**

distortion. *Optics.* The aberration of a lens or lens system which causes objects to appear misshapen or deformed when seen through the lens or lens system.

distributing point. Point at which supplies, obtained from the supply point by a division or other unit, are broken down for distribution to subordinate units. Distributing points usually carry no stocks; items drawn are issued completely as soon as possible.

distribution. 1. Pattern of projectiles about a point.
2. Term used to embrace the functioning of receipt, storage, transportation, and final issue of equipment and supplies to the points or places where required by the Military Establishment.

distribution parts. Spare parts representing the difference between the quantity procured and those eventually used in maintenance operations. They include parts lost due to enemy action and those necessary, as a safety factor, to keep the supply lines filled at all times.

ditching device. A device designed to effect an automatic landing or deliberate crash landing of a pilotless aircraft, should remote control be lost.

dither. A signal of controlled amplitude and fre-

quency applied to the servomotor operating a transfer valve, such that the transfer valve is constantly being 'quivered' and cannot stick at its null position.

dither mechanism. A device employed in the remote control system of certain artillery weapons, which prevents the building up of static friction in some of the components of the system by keeping them in constant vibration.

dive. 1. A rapid descent by an aircraft or missile, nose downward, with or without power or thrust.
2. In stress analysis, a design condition for the wings representing a steady state of flight characterized by high speed and an angle of attack approximately that of zero lift.

dive angle. The acute angle between the horizontal and the line of an object's dive.

dive bombing. The action of bombing a target from a diving airplane, esp. an airplane diving steeply. Cf: **glide bombing; low-angle bombing; toss bombing.**

dive-bombing sight. A bombsight for use in dive-bombing attacks.

diverging lens. Also known as divergent lens, negative lens, concave lens, dispersive lens. A lens which causes parallel light rays to spread out. One surface of a diverging lens may be concavely spherical and the other plane (plano-concave), both may be concave (double concave) or one surface may be concave and the other convex (concave-convex, divergent-meniscus). The diverging lens is always thicker at the edge than at the center.

diverging yaw. In the flight of a projectile, if the angle of yaw increases from the initial yaw, the yaw is said to be diverging, and the projectile will be unstable. See: **stability factor.**

dividing network. *Electroacoustics.* A frequency selective network which divides the spectrum to be radiated into two or more parts.

division artillery. Artillery that is permanently an integral part of a division. For tactical purposes, all artillery placed under the command of a division commander is considered division artillery.

D-layer. The lowest layer of the ionosphere.
This layer, occurring at between 25 and 50 miles above the earth's surface, absorbs some of the radio energy reflected by the higher layers.

DM (abbr). Chemical agent, 'diphenylaminechloroarsine' (adamsite, war gas).

DME (abbr). 'Distance-measuring equipment.'

dml (abbr). 'Demolition.'

DN (abbr). 'Department of the Navy.'

DNP (abbr). 'Dummy nose plug.'

DNT (abbr). 'Dinitrotoluene' (explosive).

DOCUMENT DESTROYER, EMERGENCY, INCENDIARY. An item designed to be used in an emergency to destroy documents, paper, or books which need not be torn up. It is intended to be used with a suitable container which is not part of the item of supply.*

DOD (abbr). 'Department of Defense.'

- DODIC** (*abbr.*). 'Department of Defense Identification Code.'
- DOFL** (*abbr.*). 'Diamond Ordnance Fuze Laboratories.'
- dolly**. Low platform or frame mounted on small wheels or casters used for moving heavy or awkward objects short distances.
- DOLLY, TRAILER CONVERTER**. An auxiliary wheeled vehicle equipped with drawbar, a lower fifth wheel and other necessary parts, designed to support the front end of a semitrailer and convert same to a full trailer.*
- doodlebug**. The V-1, or German flying bomb. *Slang.*
- DOPPLER DRIFT GROUP**. A group which provides facilities for indicating the drift of an aircraft by utilization of the Doppler effect.*
- Doppler effect**. Apparent change in frequency of sound, or radio wave trains reaching an observer, or a radio receiver etc., caused by a change in distance, or range, between the source and the observer, or receiver, during the interval of reception.
- Doppler shift**. Magnitude of the change in observed frequency due to Doppler effect, as in shift of a luminous body's lines in a spectrum toward the red indicating distance is increasing.
- DOPPLER VELOCITY GROUP**. A group which provides facilities for indicating the radial velocity of a guided missile by utilization of the Doppler effect.*
- dose**. The total amount of nuclear radiation received by an individual expressed in roentgens. Usually used to mean total dose.
- dose rate**. A measurement of the intensity of persistent or residual radioactivity expressed in terms of roentgens per hour.
- dosimeter**. An instrument for measuring the total dosage of nuclear radiation, in roentgens or miliroentgens, received in a given period. See: **RADIACMETER**; **RADIAC SET**.
- double action**. Method of fire in a revolver and in old-style rifles and shotguns in which a single pull of the trigger both cocks and fires the weapon.
- double angle cone**. See: **double angle liner**.
- double angle liner**. In shaped charge ammunition, a liner made up from two surmounted, coaxial, conical sections having different apex angles.
- double base powder**. Preferred term is 'double base propellant.' See: **propellant**.
- double base propellant**. See: **propellant**.
- double pole-piece magnetic head**. *Electroacoustics.* A magnetic head having two separate pole pieces in which pole faces of opposite polarity are on opposite sides of the medium. One or both of these pole pieces may be provided with an energizing winding.
- doubler**. In electronics, a circuit for doubling the input frequency. This may be done by tuning the plate circuit to twice the grid frequency or in several other ways.
- double-recoil system**. A system in which the gun recoils on the top carriage and the top carriage recoils on the bottom carriage or trail.
- double sampling**. A sampling and inspection technique in which final disposal of the lot is based upon the inspection of a second, larger sample, if the inspection of the original sample results in discovery of a number of rejects which is greater than the number allowed for acceptance, but less than that requiring rejection of the lot based upon the results of inspection of the combined original and second sample. The number of rejects requiring rejection of the lot, based upon the combined sample, is always one greater than the number permitting acceptance, so that decision is always possible.
- double star**. Indicates, in the case of a **SIGNAL, ILLUMINATION, AIRCRAFT**, two freely falling stars (lights) of the color or colors indicated.
- double-taper**. Taper of an airfoil in planform and in cross-section thickness from root to tip.
- double vision**. 1. A malfunction of a binocular instrument causing two images to be seen separately instead of being fused. It is caused by the optical axes of the two telescopes not being parallel. In minor cases, the eyes will adjust themselves to compensate for the error of the instrument until the images are superimposed and only one object is seen. This may cause eyestrain, eye fatigue, and headaches. 2. An eye disorder known as diplopia, which results in double vision of a single object. It is usually caused by one eye failing to converge or diverge in unison with the other eye.
- Dove**. A heat-homing bomb, developed in WW II.
- Dove prism**. Also known as rotating prism. A form of prism designed by H. W. Dove. It is used to invert the image in one plane without deviating or displacing the axis. Used as the rotating prism in the conventional type of optical system or panoramic telescopes.
- down-aileron**. The aileron in the down position that creates lift, as distinguished from the up-aileron. See: **aileron**.
- downdraft carburetor**. A carburetor in which the air is sucked in from above.
- downgrade**. To assign a lower security classification than that previously assigned. The notification of holders of such material is a part of the process. For classifications see: **defense information**.
- downward modulation**. *Receivers.* Modulation in which the instantaneous amplitude of the modulated wave is never greater than the amplitude of the unmodulated carrier.
- downwash**. The downward deflection of air, relative to the direction of motion of an airfoil.
- DP** (*abbr.*). 1. 'Diphosgene' (war gas). 2. 'Deck penetrating.' 3. 'Dual purpose.' 4. 'Distribution point.'
- dp** (*abbr.*). 'Dump.'
- DPA** (*abbr.*). 'Diphenylamine' (propellant additive).
- DR** (*abbr.*). 1. 'Demolition rocket.' 2. 'Dead reckoning.'
- drag**. Components of air resistance in the direction opposite to that of the motion of the center of gravity of a projectile.

drag area. See: area, drag.

drag, base. Drag component caused by the reduction of pressure across the base of a missile or projectile to below the ambient pressure.

drag, burner. See: burner drag.

drag coefficient. 1. A coefficient that gives the relative air resistance of a particular airfoil. 2. A coefficient used in calculating the drag component of forces in an atomic blast wave.

drag direction. In stress analysis, the direction of the relative wind. See: chord and lift direction.

drag force or component. *Stress analysis.* A force or component, in the drag direction, i.e., parallel to the relative wind. See: chord force or component; lift force or component; side force or component.

drag, induced. The part of the total drag induced by the lift.

The airflow that causes lift causes drag in proportion to the square of the lift.

drag, nose. Drag due to the pressure on the nose of an airplane or missile.

drag parachute. A deceleration parachute.

drag, parasite. The portion of the total drag of an aircraft exclusive of the induced drag of the wings.

drag, profile. The difference between the total wing drag and the induced drag.

drag, profile, effective. The difference between the total wing drag and the induced drag of a wing with the same geometric aspect ratio but elliptically loaded.

drag, skin-friction. That component of drag which is tangent to the surface of a body and which is caused by skin friction. It is a function of the total wetted surface and varies with the smoothness of the surface.

drag-weight ratio. The ratio of the drag of a missile to its total weight.

drawbar. An item designed as an integral part of a vehicle and provided with a hitch for the purpose of towing or moving the vehicle. See also: towbar.*

drawing number. An identification number assigned to a drawing.

DRIER, INFRARED. A heating device employing infrared lamps or infrared resistance elements for accelerating the drying process of chemical compounds, paints, or inclosures.*

drift. 1. The lateral deviation of the trajectory from the plane of departure, caused by rotation of the projectile. As a result, the horizontal trace of the trajectory is a curved, rather than a straight, line. 2. Amount of sidewise movement or displacement caused by a side wind acting on an aircraft, ship, or barrage balloon. 3. Slow spreading of a chemical cloud by gravity and wind.

drift angle. The angle between the projected line of an aircraft's heading and its track.

drill ammunition. Inert ammunition designed or adapted for use in training of the weapon's crew.

drill bomb. See: bomb, drill.

drill cartridge. See: cartridge, drill.

drilling machine. A stationary machine having rotating

spindle(s) designed to hold cutting tools which are fed through materials supported upon an integral working surface.*

drill projectile. See: projectile, drill.

DRIVE, ANTENNA. A device which rotates or positions an antenna through a predetermined orbit, or to a point, such as a target. Not designed to support an antenna.*

DRIVER, PROJECTILE UNIT, POWDER ACTUATED. A tool which utilizes an explosive charge to drive a specially designed stud, pin, or like projectile into or through solid material, such as concrete or steel. In operation, the tool is not fixed and is controlled by hand. It may be suitable for use under water.*

DRIVE, SECTOR SCAN. An item which provides facilities for positioning in azimuth, and adjusting in amplitude, the sector scan display on the cathode-ray tube indicator of a RADAR SET.*

driving band. See: band, rotating.

driving face force. The force which is placed on the face of the *band land* on the engraved rotating band of an artillery projectile by the rotational acceleration of the projectile as its translational and rotational velocities are increased in the passage through the bore of the gun.

drone. A remotely controlled aircraft.

droop. Bending of a structure due to its own weight, such as the curvature of a very long tube in a heavy artillery piece.

drop. *Specif.* 1. The action of dropping a bomb. 2. The vertical drop (which see) of a projectile. 3. Parachute jump, individual or en masse, or supply delivery by parachute, or the act of making such a jump or delivery.

droppable. 1. Of containers or equipment: That can be dropped by being pushed or tossed from an aircraft while in flight. 2. Of a pod or fuselage: That can be detached while in flight and be landed either by parachute or nonpowered glide.

dropping angle. See: range angle.

dropping safe. Releasing an aircraft bomb or flare so that it will not function on impact. Some flares, however, may function on impact, even when dropped safe.

drop-test. To test parachutes or equipment by using them in an airdrop.

drum. 1. Adjusting device and scale for making fine settings on certain types of gunsights. The coarse setting is made on a device called a plateau. 2. Cylinder magazine, from which cartridges are fed, on certain machine guns and recoilless rifles. 3. Metal container for liquids. In this meaning, usually preceded by the quantity, as 5-gallon drum, 55-gallon drum.

DRUM, CARGO, AERIAL DELIVERY. A cylindrical item of nonflexible material having two flat ends or heads, one of which may be removable with a mechanical type closure, with fittings and fasteners used for the delivery of cargo. It is dropped from an aircraft by parachute.*

drum magazine. See: *magazine* (sense 2).

DRUM TILTER, PROPELLANT SERVICING. A device specifically designed to be used with a fork lift truck for servicing a guided missile propellant tank(s). Designed to hold, and automatically invert a propellant filled drum while being elevated to its proper height to provide gravity flow.*

dry run. 1. Any practice test or session. 2. Any simulated firing practice, particularly a dive bombing approach made without the release of a bomb.

dry-sump lubricating system. A system of engine lubrication in which the oil is collected and stored outside the crankcase.

dry weight of an engine. The weight of an engine exclusive of fuel, oil, and liquid coolant (if any).

DS (abbr). 'Discarding sabot.'

dualgran (abbr). 'Dual granulation.'

dual granulation. (dualgran) Pertaining to propelling charges, indicates a propelling charge composed of grains of two different webs. This is done for some howitzers in order that a higher pressure and more uniform ballistics may be obtained for the inner zones. The propellant for the inner zones has a faster rate of burning than that for the outer zone.

dual ignition. Ignition in which the cylinders of an engine are fired by two separate and complete ignition systems.

dual networks. *Network topology.* See: **structurally dual networks.**

dual-purpose gun. Gun so designed and constructed that effective fire may be delivered against either aerial or surface targets.

dual wheels. Two wheels, bolted together at the same end of an axle shaft. In counting wheels for the nomenclature of a vehicle dual wheels are considered as one wheel.

ducted-fan jet engine. A kind of turbojet engine in which a propeller or fan forces low-pressure air through ducts directly into the hot turbine exhaust at the turbine exhaust pressure.

ducted propulsion. Any propulsion system which passes the surrounding atmosphere through a channel or duct while accelerating the mass of air by a mechanical or thermal process.

dud. An explosive munition that has failed to explode, although such was intended.

due in. The quantities of material expected to be received under outstanding procuring and requisitioning instruments, and quantities from other sources such as transfer, reclamation, and recovery.

due out. As applied to a supplying installation, that portion of stock requisitioned which was not immediately available for issue but which is recorded as a commitment for future use. Synonymous with current unfilled demand.

dugout. Underground shelter built to protect troops, ammunition, and materiel from gunfire. See also: **bombproof.**

DUKW. See: **LANDING VEHICLE, TRACKED.**

dumdum. A bullet that flattens excessively on contact, or one especially designed to flatten excessively. In full, 'dumdum bullet.' The use of this type of bullet in warfare is forbidden under international law.

dummy. *Specif.* 1. A nonexplosive bomb, projectile, or the like, or an object made to appear as one of these. 2. An object made to appear as an airplane, gun emplacement, or the like from the air.

dummy ammunition. See: **drill ammunition.**

DUMMY DETONATOR. An inert item designed to be used in lieu of a detonator for training purposes only.* The item may be simulated electric type or simulated percussion type.

dummy fuze. See: **fuze, dummy.**

dummy grenade. See: **grenade, training.**

DUMMY TORPEDO. An item designed to be substituted for a torpedo when proof-checking the fitment requirements of the various launching devices. It is similar to its legitimate counterpart in outside configuration.*

DUMMY WARHEAD, ROCKET. An item designed to be substituted for a tactical warhead. It conforms to the outside configuration of the legitimate rocket warhead, and is used for training purposes only.*

dump. (dp) 1. A temporary storage area, usually in the open, for bombs, ammunition, equipment, or supplies. 2. To drop bombs or throw out supplies. *Slang.*

dunnite. See: **Explosive D.**

DUPLEXER. An item which permits a transmitter and receiver to operate on a single transmission line and/or antenna. It effects a mismatch in the receiver section of the transmission line when the transmitter is operating and restores matching in this section when the transmitter is quiescent.* Sometimes called 'T-R box.'

Duprene packing. Type of packing used in recoil mechanisms to prevent leakage of recoil oil.

duty cycle. *Electronics.* The ratio of the pulse duration time to the pulse repetition time.

dwg (abbr). 'Drawing.'

dynamic. Of or pertaining to dynamics, esp. to aerodynamics.

dynamic factor. The ratio between the load carried by any part of an aircraft when accelerating and the corresponding basic load.

dynamic pressure. See: **pressure, dynamic.**

dynamics. A branch of mechanics that treats of the motion of bodies and of the forces acting upon bodies in motion or in process of changing motion.

In early usage, 'dynamics' was used where 'aerodynamics' might be used today as a more restrictive term.

dynamic similarity. The similarity in the fluid flows about a scale model and a full-scale model.

This is expressed by a Reynolds number, which shows a ratio between the forces due to density and the forces due to viscosity.

dynamic stability. The property of an aircraft or missile which, when its steady motion in flight is disturbed, causes it to damp any oscillation and gradually return the aircraft or missile to its original state of steady motion. See: **stability**, sense 1 a.

DYNAMITE. A high explosive consisting of nitroglycerin and/or nitroglycol and/or ammonium nitrate and other materials with or without an inert base, packed in cylindrical paper cartridges or in bags. It is set off by a detonator and is generally used to break rocks, move dirt or demolish buildings.*

dynamite bomb. See: **bomb**, **dynamite**.

dynamite, military. A blasting explosive in cartridges especially suitable for use in military construction,

quarrying, and service demolition work. It has good storage stability, is rifle bullet insensitive and can be detonated when wet. See also: **DYNAMITE**.

dynamometer. A device for measuring the power, thrust or torque of an engine or rocket.

DYNAMOTOR. An item which combines both electric motor and generator action in one magnetic field, either with two armatures on one shaft or one armature having two or more windings. The input voltage is direct current. The output is direct current but may include auxiliary alternating current outputs. May include accessories such as relays, filters, and the like.*

E

E (*abbr.*). 1. In such usage as M53E4, designates an experimental modification of a standard item. 2. In jato unit nomenclature, designates an extruded double base solid propellant.

earth shock. A violent tremor in the earth as that caused by a bomb explosion beneath the surface of the earth.

EC blank fire. See: **EC smokeless powder.**

eccentricity. 1. In dimensioning and inspection procedures, the opposite of *centrality*. The offset of the axis of one geometrical form with that of another, usually an undesirable condition. For instance, a rotating band would have eccentricity with respect to, or be eccentric with, the projectile body, if it protruded further from the body at one point than it did at a point 180° removed. Must be distinguished from ovality, which is a departure from the specified cylindrical form. 2. Static eccentricity of a projectile is the distance, in calibers, of the center of mass from the axis of the projectile. Dynamic eccentricity is the angle, in radians, between the axis of form and the longitudinal principal axis of inertia.

eccentric-screw (Nordenfeld) breechblock. See: **breechblock, eccentric-screw (Nordenfeld).**

echo. *Specif.* A radar echo. The signal received by a radar set as a result of the reflection of a transmitted pulse from objects in the field of scan.

ECM (*abbr.*). 'Electronic countermeasures.'

economic mobilization. The process of preparing for and carrying out such changes in the organization and functioning of the national economy as are necessary to provide for the most effective use of resources in a national emergency.

economic war potential. That segment of the economic capacity of a nation which can be used for purposes of conducting war.

EC smokeless powder. An explosive powder used chiefly in blank cartridges. Also called 'EC blank fire,' 'EC blank powder,' and 'EC powder.' EC powder is used in some caliber .22 and shotgun ammunition, and was formerly used in fragmentation grenades.

ED (*abbr.*). 'Ethylchloroarsine' (war gas).

EDD (*abbr.*). 'Ethylenediamine dinitrate' (explosive).

Edgewater adapter. A kind of recoil adapter fastened to the receiver of an aircraft machine gun and surrounding the barrel. See: **recoil adapter.**

EDNA (*abbr.*). 'Ethylenedinitramine' (Haleite, explosive).

ednatol. A binary explosive composed of 55 percent Haleite and 45 percent TNT. Permits melt loading

into munitions and has greater brisance than TNT alone. See also: **Haleite.**

effective angle of attack. See: **angle of attack, effective.**

effective area. See: **area, effective.**

effective aspect ratio. See: **ratio, effective aspect.**

effective ceiling AA. The maximum vertical range within which an anti-aircraft gun may engage for a period of 20 seconds an aircraft approaching directly at 300 miles per hour, firing the last round at a quadrant elevation of 70°.

effective firing time. The period of time during which an aircraft can deliver effective fire at a moving or a stationary target.

effective fragment. In terminal ballistics, a fragment whose mass, velocity, and form, upon impact with the target are such as to enable the fragment to accomplish the desired effect.

effective height. *Antennas.* The height of the antenna center of radiation above the effective ground level.

For an antenna with symmetrical current distribution, the center of radiation is the center of distribution. For an antenna with asymmetrical current distribution, the center of radiation is the center of current moments when viewed from directions near the direction of maximum radiation.

(Former usage) In low-frequency applications, as applied to loaded or nonloaded vertical antennas, the actual height of the vertical section multiplied by the ratio of the average current in that section to the input current.

effective mass of projectile. In interior ballistics, the mass of the projectile plus a portion of the mass of the propellant. Accounts for the energy of translation imparted to the propellant gas concurrently with accelerating the projectile, and therefore not available for the latter purpose.

effective profile drag. See: **drag, profile, effective.**

effective range. Distance at which a weapon may be expected to fire accurately to inflict casualties or damage. See: **maximum effective range.**

effective wind. A calculated wind equal in speed and direction to the average of any given number of varying actual winds, used esp. in sound-ranging and weather observation. Cf: **ballistic wind.**

efficiency, overall. *Cartridge actuated devices.* Ratio of kinetic energy of propelled mass to total energy of propellant charge.

efficiency, piezometric. *Cartridge actuated devices.* Ratio of mean ballistic cycle pressure to peak pressure of CAD during stroke time.

e.g. (*abbr.*). 'For example.'

EHF (*abbr.*). 'Extremely high frequency.'

ejecta. Jet fragments ejected essentially beyond primary target plate in the testing of shaped charges.

ejection. Process of ejecting the empty cartridge case from small arms and rapid fire guns. Performed by the ejector, which see.

ejection cockpit capsule. A detachable pressurized cockpit on certain airplanes which may be ejected as a unit and parachuted to the ground.

ejection seat. See: **SEAT, AIRCRAFT EJECTION.**

ejector. 1. Mechanism in small arms and rapid fire guns which automatically throws out an empty cartridge case or unfired cartridge from the breech or receiver. Cf. **extractor.** 2. The open aft portion of a jet-engine shroud, which permits the escape of cooling air.

EJECTOR, AERIAL PHOTOFLASH CARTRIDGE.

A device for firing in sequence photoflash cartridges, for use in taking night photographs from aircraft.*

elasticity correction. Change made in standard firing data to allow for the effect on range of changes in temperature.

elasticity effect. Influence on range of temperatures that vary from those upon which standard firing tables are based.

elastic strength pressure. (ESP) See: **pressures, gun.**

elct (abbr). 'Electronics.'

elec (abbr). 'Electric.'

electra. A German continuous wave navigation system using radio beacons providing multilobe equisignal patterns.

electrical distance. The distance traveled by radio waves in a unit of time. A convenient unit of electrical distance is the light microsecond, or about 983 feet (300 meters). In this unit the electrical distance is numerically equal to the transmission time in microseconds.

electrical function switch. *Electronic computers.* See: **function switch.**

electrical interception. Gaining possession by electrical means of communications intended for others.

electrical load. See: **load (sense 6).**

electrical scanning. See: **scanning, electrical.**

electrical schematic. A drawing which shows the electrical circuit of an item with the parts indicated by symbols so placed that the circuit may be traced from part to part in the sequence of their respective functions with no attempt to indicate the actual physical location of the parts in the item.

ELECTRICAL STANDARDS SET. A grouping of items consisting of various standards of capacitance, inductance, resistance, voltage, and like items of known accuracy, calibrated for use as a basis for obtaining precise and reliable measurements.*

electric cartridge. See: **cartridge, electric.**

electric detonator. See: **DETONATOR, ELECTRIC.**

electric dipole. A pair of equal and opposite charges an infinitesimal distance apart.

In electromagnetics, the term 'dipole' is often applied to two equal and opposite oscillating charges

an infinitesimal distance apart; in this sense, it is synonymous with an electric current.

electric fuze. See: **fuze, electric.**

electric primer. See: **PRIMER, ELECTRIC.**

electric squib. See: **SQUIB, ELECTRIC.**

electric time fuze. See: **fuze, electric time.**

electric transducer. See: **transducer, electric.**

electron. A very light particle with a mass 1/1845 that of a proton, having a negative charge.

Electrons are constituents of the atom. See: **beta particle; cathode ray.** Cf: **positron.**

electron beam. A stream of electrons moving at high velocity, as in a cathode-ray tube; a cathode ray.

electron bomb. See: **bomb, electron.**

electron gun. A device used in a cathode-ray tube to form, accelerate, and focus an electron beam.

electronic. Pertaining to the application of that branch of science which deals with the motion, emission and behavior of currents of free electrons, especially in vacuum, gas or phototubes and special conductors or semiconductors. Contrasted with *electric* which pertains to the flow of large currents in wires only.

electronic countermeasure. (ECM) Usually *pl.* Any of various offensive or defensive tactics using electronic and reflection devices to reduce the military effectiveness of enemy equipment or tactics employing or affected by electromagnetic radiations.

electronic fuze. See: **fuze, electric.**

electronic intelligence. Intelligence regarding the location, volume, direction, and type of enemy electronic devices; intelligence obtained by intercepting enemy electronic emanations.

Electronic countermeasure reconnaissance, the interception of enemy radio messages, the interrogations of prisoners of war, photo interpretation, and other activities are sources of electronic intelligence.

electronic jamming. An action involved in electronic countermeasures, being the radiation or reradiation of electromagnetic waves to impair the use of a specific segment of the radio spectrum. Usually shortened to 'jamming.'

electronics. (elct) That branch of physics which treats of the emission, transmission, behavior, and effects of electrons.

Practical application of electronics has been made through such devices as vacuum tubes, cathode-ray tubes, photo-electric cells, and the like.

electronic security. The protection resulting from all measures designed to deny to unauthorized persons information of value which might be derived from their intercept and study of friendly noncommunications electromagnetic radiations.

ELECTRONIC SHOP, TRAILER MOUNTED. A trailer permanently fitted with equipment and tools for testing and repairing electrical and electronic equipment.*

ELECTRONIC SHOP, TRUCK MOUNTED. A truck permanently fitted with equipment and tools for testing and repairing electrical and electronic equipment.*

ELECTRONIC SWITCH. An item which provides for the transfer of the electrical signal input from one component to another, or between two or more components by means of electron tube circuits. See also: **GATE, ELECTRONIC.***

electronic warfare. That subdivision of the military use of electronics involving actions taken to prevent or reduce an enemy's effective use of radiated electromagnetic energy and actions taken to insure our own effective use of radiated electromagnetic energy.

elements of the trajectory. The phrase applied to the various features of the trajectory such as the angle of departure; maximum ordinate; angle of fall, etc.

elevate. To increase the angle of elevation of a gun, launcher, optical instrument, or the like.

elevating arc. Upright, geared arc, attached to a weapon or carriage, by means of which the weapon is elevated and depressed.

elevating mechanism. Mechanism on a gun carriage or launcher by which the weapon is elevated or depressed.

elevation. 1. Angle of elevation. 2. In antiaircraft artillery, the angular height is sometimes called elevation and dials on some equipment, which indicate angular height, are marked 'elevation.' 3. The vertical distance, usually measured in feet or meters, above mean sea level (plus elevation) or below mean sea level (minus elevation).

elevation circle. Circular scale showing the quadrant elevation of the gun barrel.

elevation difference. The change in elevation which must be applied to a particular gun when firing data are being received from a base piece or other directing point.

elevation mechanism. See: **elevating mechanism**, the preferred term.

elevation plane. The vertical plane in which the angle of elevation is measured.

The elevation plane is perpendicular to the azimuth plane.

elevation prediction correction. *Antiaircraft.* Equals the future elevation minus the present elevation.

elevation quadrant. See: **quadrant.**

elevation rate. Rate of change of present elevation. It is equal to minus the zenith distance rate of the present line. It may be expressed in mils per second or degrees per second.

elevation scale. Scale on a gun carriage that shows the quadrant elevation of the gun.

elevation stop. Structural unit in a gun or other equipment that prevents it from being elevated or depressed beyond certain fixed limits.

elevation table. Firing table giving a list of ranges, with the corresponding quadrant elevation settings to be applied to a gun.

elevator. A control surface, usually attached to the horizontal stabilizer, moved to make the tail of an aircraft go up or down.

elevator angle. The acute angle between the chord of

an aircraft elevator moved from its neutral position, and its chord in neutral position.

elevator. A control surface combining the functions of an elevator and an aileron.

embrasure. Opening in a wall or parapet, especially one through which a gun is fired. It is usually cut wider at the outside to permit the gun to swing through a greater arc.

emissivity. The rate at which a solid or a liquid emits electrons when additional energy is imparted to the free electrons in the material by the action of heat, light, or other radiant energy or by the impact of other electrons on the surface.

empennage. The assembly at the rear end of an aircraft comprised of the horizontal and vertical stabilizers and their associated control surfaces. Also called the 'tail assembly.'

empl (abbr). 'Emplacement.'

emplace. Put in position; fix a gun or launcher in a prepared position from which it may be fired.

emplacement. (empl) 1. Prepared position for one or more weapons or pieces of equipment, for protection against hostile fire or bombardment, and from which they can execute their missions. 2. Act of fixing a gun in a prepared position from which it may be fired.

empty. When used in ammunition nomenclature, indicates that the munition does not contain a payload, but is designed to contain one at the time of final use.

ENAMEL. Pigment dispersed in a varnish vehicle containing natural or synthetic resin. The varnish may be modified with drying oil to the extent that the total drying oil content of the vehicle, including the oil in the varnish, does not exceed 75 percent, by weight, of the total nonvolatile portion of the vehicle. When applied in a thin layer, it dries principally by polymerization and/or oxidation to form a hard, smooth, opaque film. Excludes **LACQUER**; **ENAMEL, HEAT RESISTING**; bituminous and ceramic coatings and **GOLD SIZE.***

ENAMEL, HEAT RESISTING. An ENAMEL that has the quality to withstand temperatures of 400 degrees F. and higher. See also: **PAINT, HEAT RESISTING.** Excludes bituminous coatings.*

end-around carry. See: **carry.**

end-fire array. A linear or cylindrical radar antenna array that emits its radiation from one end.

end instrument. See: **pickup (sense 3).**

end item. A combination of components, assemblies, and/or parts, which is ready for its intended use. Often used as a cataloging term in supply.

end link. See: **LINK, CARTRIDGE.**

end play. Movement of a shaft along its axis. A type of lost motion common to worm and wormwheel assemblies. The error lies in looseness in the bearings at the ends of the shaft or in the ball cap and socket. The result is that the worm can be rotated a small amount without causing rotation of the wormwheel.

ENERGIZER, ENGINE STARTER. An electrically

operated auxiliary cranking device designed to energize the flywheel of inertia or combination type starters.*

energy, radiant. Energy consisting of electromagnetic waves, such as light, infrared, radio, and radar.

Enfield rifle. The popular name for the United States rifle, caliber .30, model 1917. It is a bolt-type, breech-loading magazine rifle. No longer standard for service use, but is used as a sporting weapon.

This WW I rifle was named for the British Enfield from which it was copied.

enfilade fire. Either frontal or flanking fire in which the long axis of the beaten zone coincides or approximately coincides with the long axis of the target; i.e., fire in the direction of the length of a line or column.

eng (abbr). 'Engine.'

engine. (eng) Any of many machines that convert energy in one form, as that of heat, into a form suited to use, as that of torque applied to a crankshaft or of kinetic flow directed into a jet stream.

The unqualified word 'engine' is often restricted to an internal combustion, piston engine.

engine analyzer. See: **ANALYZER SET, ENGINE.**

engine block assembly. The engine block of an internal combustion engine with one or more of the internal functioning components such as pistons, crankshaft, camshaft, and may have oil pan(s) or cylinder head(s). For engine block assemblies with cylinder head(s) and oil pan(s), see: **ENGINE** (as modified); (use type of engine as modifier; e.g., gasoline, diesel, gas).*

ENGINE, DIESEL. A reciprocating internal combustion engine in which the power necessary to produce motion of the mechanism is obtained by igniting a compressed fuel and air mixture within the cylinder or cylinders by the extreme heat resulting from compression. The engine consists of a cylinder block assembly complete with cylinder head(s) and one or more of the attachments or accessories, such as oil pan(s), starter motor, radiator, transmission, clutch, oil filter, flywheel, flywheel housing or battery charging generator. Does not include fuel tank. For a complete operating power unit mounted on a base, see: **POWER UNIT, DIESEL**.*

engineering notebook. See: **laboratory notebook.**

engineering test. An evaluation test of materiel under development conducted by, or under the supervision of, the technical service concerned, to determine inherent structural, electrical, or other physical and chemical qualities of the item or system tested, including those of an environmental nature, designed to provide a basis for decisions as to subsequent developmental action or the suitability of the item for user test (which see).

ENGINE, GASOLINE. A reciprocating internal combustion engine in which the power necessary to produce motion of the mechanism is obtained by igniting a compressed fuel and air mixture within the cylinder or cylinders of the machine, by means of introducing an electrical spark into the compression

chamber. The engine consists of a cylinder block assembly complete with cylinder head(s), oil pan(s), and one or more of the attachments or accessories, such as starter motor, radiator, transmission, clutch, oil filter, flywheel, flywheel housing, or battery charging generator. Does not include fuel tank. For a complete operating power unit, mounted on a base, see: **POWER UNIT, GASOLINE**.*

ENGINE, GAS TURBINE. A continuous combustion type engine consisting primarily of a compression chamber, combustion chamber and turbine. Air is compressed and heated by a combustible fuel and expanded through the turbine. It is designed to furnish a source of rotary shaft and/or pneumatic power. The pneumatic power is obtained by a bleed-off of the engine compressor.*

ENGINE, PULSE-JET. A combination type power unit designed to exert thrust by receiving air through valves in its front and mixing this air with a continuous supply of metered fuel which is ignited. The expanding gases close the valves which causes the exhaust gases to leave through a tail pipe with the forward thrust reopening the valves and the cycle is repeated.*

ENGINE, RAMJET. A continuous mass flow power unit designed to exert thrust by means of atmospheric air being compressed by ram compression in the inlet diffuser. The compressed air is charged with a continuous spray of pressurized fuel, ignited and ejected at high velocities through the exit nozzle.*

engine, rocket, liquid propellant. See: **ROCKET ENGINE.**

engine, rocket, solid propellant. See: **ROCKET MOTOR.**

ENGINE, TURBO-JET. A continuous-combustion type power unit designed to exert thrust, prime physical characteristics of which include an air compressor, combustion chamber(s) and a gas turbine. The operating principle is as follows: atmospheric air is inducted into the unit at its front, compressed, heated by combustion of a fuel, expanded through the gas turbine, and ejected at high velocity at its rear.*

engraving. Process by which the rotating band of a projectile (or jacket of a bullet) is cut and formed by the rifling of the gun tube as the projectile is forced through the tube; the lands and grooves produced on the band or jacket by this process. See also: **band groove; band land.** Cf: **body engraving; rifling.**

Eniac. [Coined: See first letters of words in definition.] The electronic numerical integrator and computer built for the Army Ordnance Corps, and formerly housed at the Ballistic Research Laboratories, Aberdeen Proving Ground. An early model, now obsolete.

enthalpy. The sum of the internal and pressure energies of a substance or system; often called the total heat. Change in enthalpy is the amount of heat added to, or subtracted from, a substance or system in going from one state to another under constant pressure.

entrance cone. *Specif.* That segment of a wind tunnel through which the air flows into the test chamber.

envelope. *Electronics.* 1. The glass or metal housing of a vacuum tube. 2. A curve drawn to pass through the peak of a graph showing the wave form of a modulated radio-frequency carrier signal.

envelope drawing. A drawing of an item giving overall and mounting dimensions, other dimensions, or other data necessary to insure that the item is functionally and physically interchangeable, regardless of the producer. All features other than those shown on the drawing or referenced on the drawing are left to the ingenuity of the manufacturers' engineers to meet the performance requirements of the item.

ENVELOPE, PROPELLANT CHARGE. An item manufactured from either a combustible or frangible material. It is cylindrical in shape and is designed to contain propellant powders. It is to be attached to a fin stabilized projectile.*

environmental protection. Research and its application designed to maintain or improve the degree of effective performance of man and equipment under various types of climatic stress.

EO (abbr). 'Explosive ordnance.'

EOD (abbr). 'Explosive ordnance disposal.'

EOR (abbr). 'Explosive ordnance reconnaissance.'

equalizer. *Specif.* A flexible connection between the axle of a split-trail weapon and that part of the carriage to which the trails are attached, for the purpose of accommodating the four points of support (two wheels and two trail spades) to irregularities in the ground.

equalizing pipe. A pipe connecting the front ends of two recoil cylinders to equalize the pressures therein.

equalizing support. The cross-beam support of an axle-support-type equalizer, on which is mounted the trails and upper carriage. It is connected to the axle by means of a horizontal pintle, which permits a vertical angular difference between the front and rear axis.

equation of state. *Chem.* A formula relating the volume, temperature, and pressure of a system.

equation solver. A computing device, often of the analog type, which is designed to: (a) Solve systems of linear simultaneous (nondifferential) equations, or (b) Find the roots of polynomials; or both.

equilibration system. Mechanism for balancing weight of gun or launcher for ease in elevating. See: **equilibrator.**

equilibrator. Force-producing mechanism designed to provide a moment about the trunnions of a gun cradle or launcher which is equal and opposite to that caused by the unbalanced weight of the tipping parts, thus making it easier to elevate the weapon. The various types of equilibrators and the distinguishing features of each are given below:

chain-type equilibrator—Transmits its force to the tipping parts by means of a chain; it usually is fixed rigidly to the top carriage.

hydropneumatic-type equilibrator—Operated by hydraulic fluid which is subject to pneumatic pressure.

pivot-type equilibrator—Transmits its force to the tipping parts through a piston rod; it is pivoted at

both ends and maintains its alignment by rotating about the pivots.

pneumatic-type equilibrator—Derives its force from compressed gas applied to a piston.

pull-type equilibrator—Force is applied in the direction which tends to draw its attachment points toward each other.

push-type equilibrator—Force is applied in the direction which tends to force its attachment points away from each other.

spring-type equilibrator—Derives its force from a coil spring.

spring-hydraulic type equilibrator—Operated by springs and controlled by hydraulic pressure.

telescoping-type equilibrator—Moving parts consist of two concentric cylinders having an action similar to the sliding tubes of a telescope.

torsion bar equilibrator—The tipping parts are connected through linkages to a torsion bar. As the weapon is depressed, torque is applied to the torsion bar through the linkages and the weapon is balanced by the increased torque resistance of the bar.

EQUILIBRATOR, CANNON. A mechanical device that compensates for the unbalanced weight of the cannon and keeps the cannon in balance at all angles of elevation so that it may be elevated or depressed by a manually operated mechanism.*

equiphase zone. The region in space within which the difference in phase of two radio signals is indistinguishable.

equisignal zone. An on-course zone lying within the overlapping zones of any two signal patterns transmitted by radio, as between the 'A' and 'N' patterns in an Adcock radio range.

equivalence ratio. The ratio of the stoichiometric air-to-fuel ratio to the experimental air-to-fuel ratio.

equivalent airspeed. See: **airspeed, equivalent.**

erase. *Electronic computers.* To replace all the binary digits in a storage device by binary zeros. In a binary computer, *erasing* is equivalent to clearing, while in a coded decimal computer where the pulse code for decimal zero may contain binary ones, *clearing* leaves decimal zero while *erasing* leaves all-zero pulse codes.

ERASER, MAGNETIC. An item which is specifically designed to disorientate the magnetic signal induced on tape or wire in preparation for the recording of another signal.*

erasing head. See: **ERASER, MAGNETIC.**

erecting system. *Optics.* Lenses or prisms, the function of which is to erect the image, that is, to bring the image upright after it has been inverted by the objective. An erecting system may consist of a pair of lenses, each of which is called an erector, or of one or more prisms.

erector. A system for raising or lowering a complete missile, or its stages, from the horizontal to the vertical position.

Erie Ordnance Depot. Ordnance Corps field installation, located at Port Clinton, Ohio.

erosion. *Specif.* The enlargement or wearing away of

the bore of a weapon by the movement of high-temperature gases and residues generated from the burning of the propellant, by chemical action and by friction between the projectile and the bore.

error. 1. *Math.* The difference between an observed or calculated value and the true value. 2. *Gunnery.* The divergence of a point of impact from the center of impact. 3. *Electronic computers.* The amount of loss of precision in a quantity; the difference between an accurate quantity and its calculated approximation; *errors* occur in numerical methods; *mistakes* occur in programming, coding, data transcription, and operating; *malfunctions* occur in computers and are due to physical limitations on the properties of materials; the differential margin by which a controlled unit deviates from its target value.

error signal. 1. *Servomechanisms.* The signal, frequently a voltage, applied to the control circuit that indicates the misalignment between the controlling and the controlled members. 2. *Tracking systems.* A voltage, depending upon the signal received from the target, whose sign and magnitude depend on the angle between the target and the center of the scanning beam.

E-scan. 1. A scan for presentation on an E-scope. 2. An E-scope. *Popular.*

escapement. A mechanical device that regulates the rate of transmission of energy. (For example, as used in a mechanical time fuze.)

escape velocity. In space flight, the speed at which an object is able to overcome the gravitational pull of the earth.

E-scope. A radarscope which presents the range of a target by a horizontal displacement of the target signal on the face of the scope, and the elevation by a vertical displacement. See: **E-scan.**

ESP (abbr). 'Elastic strength pressure.'

ESP (hot) (abbr). 'Elastic strength pressure (hot).'

esp. (abbr). 'Especially.'

establishment. General term for an installation or a headquarters, especially in British terminology.

estimated data. *Specif.* Firing data which are determined by estimate rather than by exact measurement or by observation of fire.

ethyl centralite. Symmetrical-diethyldiphenylurea. An additive used in propellant formulation having an effect similar to diphenylamine. See: **diphenylamine.**

ethyldichloroarsine. (ED) A blister gas, irritating to the eyes and respiratory tract, which will produce eye and lung injury upon sufficient exposure.

ethylenediamine dinitrate. (EDD) High explosive, used to a limited extent by the Germans during World War II as a bursting charge. Must be loaded by pressing. Considered to be an inferior substitute for TNT because of its solubility, hygroscopicity, and acidity characteristics.

ethylene glycol. An **ANTIFREEZE** (which see).

ethyl phosphorodimethylamidocyanidate. (GA) See: **tabun.**

E-vector. The vector representing the electric field

of an electromagnetic wave. In free space it is perpendicular to the direction of propagation.

evening gun. Firing of a gun as a signal for the lowering of the flag at retreat. The gun is fired after the sounding of the last note of the bugle call at retreat. Also called **retreat gun.**

EW (abbr). 'Electronic warfare.'

extractor. A cartridge actuated device intended to release the safety mechanism of another cartridge actuated device. The extractor operates by gas pressure supplied from an INITIATOR, CARTRIDGE ACTUATED. See also: **cartridge actuated device.**

excitation. 1. Application of a signal to the input of a vacuum tube amplifier. 2. Application of signal power to a radio transmitting antenna. 3. Application of current to the transmitting and receiving elements of a synchro or self-synchronous device. In this meaning called **selsyn excitation.**

EXCITER, IMPACT CRYSTAL. A device designed to create mechanical shocks of uniform intensity. It is used to excite impact crystals, which generate electrical pulses that may be measured by a test set.*

exclusive license. *Patent law.* Exclusive permission to use, manufacture and sell patented article. Contract not to give leave to anyone else to do the same thing. Cf: **license.**

EXERCISE HEAD, GUIDED MISSILE. An item designed to simulate a WARHEAD, GUIDED MISSILE. It may or may not contain telemetering devices and/or flash signals.*

EXERCISE HEAD, TORPEDO. An item designed for attachment to a TORPEDO MAIN ASSEMBLAGE to complete a torpedo for a practice run. It may contain recording instruments.*

EXERCISER, RECOIL MECHANISM. An item specifically designed for exercising hydropneumatic recoil mechanism. It usually consists of a power unit, a hydraulic system and a control system. It may be trailer mounted.* See also: **gymnasticator.**

exhaust manifold. See: **manifold.**

expansion ratio. 1. In jet propulsion the ratio of the nozzle exit section area to the nozzle throat area. 2. *Cartridge actuated devices.* Ratio of final to initial volume in a stroking type CAD.

expansion wave. *Aerodynamics.* A pressure wave or kind of shock wave that has the effect of decreasing the density of air as the air passes through it.

Expansion waves are often distinguished from shock waves. Cf: **compression wave.**

expelling charge. See: **charge, expelling.**

expendable. Of a supply item or piece of property: That is consumed, or loses its identity, when used; expected to be consumed or to lose its identity.

experimental type. See: **type classification.**

explo (abbr). 'Explosive' or 'explosion.'

explode. To be changed in chemical or physical state usually from a solid or liquid to a gas (as by chemical decomposition or sudden vaporization) so as suddenly to transform considerable energy into the kinetic form. See also: **explosion.**

exploded view. A drawing or picture of any article or piece of equipment in which the component parts are separated but so arranged as to show their relationship to the whole.

exploder. See: **BLASTING MACHINE.**

EXPLODER MECHANISM, TORPEDO. An electrical and/or mechanical device designed to actuate the explosive train of a **WARHEAD, TORPEDO** by means of a physical impact or an influence signal. It may contain a disarming device.*

exploratory research. See: **basic research.**

explorer. Name given to series of earth satellites launched by the Army. Explorer I, the first US satellite, was launched and went into orbit on 1 February 1958.

explosion. (expl) A chemical reaction or change of state which is effected in an exceedingly short space of time with the generation of a high temperature and generally a large quantity of gas. An explosion produces a shock wave in the surrounding medium. The term includes both deflagration and detonation. Cf: **deflagration; detonation.**

explosion, confined. Explosion occurring, as in a closed chamber, where the volume is constant.

explosion, unconfined. Explosion occurring in the open air where the (atmospheric) pressure is constant.

explosive. (expl) A substance or mixture of substances which may be made to undergo a rapid chemical change, without an outside supply of oxygen, with the liberation of large quantities of energy generally accompanied by the evolution of hot gases. Explosives are divided into two classes: high explosives and low explosives, according to their rate of reaction in normal usage. Certain mixtures of fuels and oxidizers can be made to explode and these are considered to be explosives. However, a substance such as a fuel which requires an outside source of oxidizer, or an oxidizer which requires an outside source of fuel to explode, is not considered an explosive. See also: **high explosive; low explosive.**

explosive bomb. See: **bomb, explosive.**

explosive bullet. A bullet which contains an explosive.

explosive catapult seat. See: **SEAT, AIRCRAFT EJECTION.**

explosive charge. See: **charge, explosive.**

explosive, conventional. A nonatomic explosive.

Explosive D. A high explosive, ammonium picrate or dunnite. Used in some armor-piercing projectiles because of its comparative insensitivity to shock and friction.

explosive decompression. A sudden loss of pressure in a pressurized cabin, cockpit, or the like, so rapid as to be explosive, as when punctured by gunfire.

explosive filler. Main explosive charge contained in a projectile, missile, bomb, or the like. See also: **charge** (sense 2).

EXPLOSIVE HARNESS ASSEMBLY, GUIDED MISSILE. An intermediate assemblage of items in an explosive train between the safety and arming devices and the guided missile warhead(s) in order

to transmit a detonating wave for initiation of the warhead(s).*

EXPLOSIVE KIT, EARTH ROD. A set of explosive and nonexplosive items, with carrying case, designed to make holes, for demolition or constructional purposes, in earth and soft shale.

explosive ordnance. (EO) Term used to denote ordnance materiel which normally contains or consists of explosives. Examples: bombs, mines, torpedoes, missiles, projectiles, and the like.

explosive ordnance disposal. (EOD) The handling, disarming, or destroying of unexploded bombs and other explosive ordnance. See also: **explosive ordnance.**

explosive ordnance disposal unit. Organization or personnel with special training or equipment who render safe **explosive ordnance**, make intelligence reports on such ordnance, and supervise the safe removal and disposal thereof. See also: **demolition squad; underwater demolition team.**

explosive ordnance reconnaissance. (EOR) Act of reconnoitering to determine the presence of an unexploded missile, ascertaining its nature, applying all practicable protective measures for the protection of personnel, installations and equipment and finally reporting essential information to the authority directing **explosive ordnance disposal operations.**

EXPLOSIVE SECTION ASSEMBLY, PRACTICE DEPTH CHARGE. A group of items assembled together to form the explosive charge compartment for a practice depth charge. It may be empty or explosive filled.*

explosive train. A train of combustible and explosive elements arranged in the order of decreasing sensitivity, inside a fuze, projectile, bomb, gun chamber, or the like. The function of the explosive train is to accomplish the controlled augmentation of a small impulse into one of suitable energy to cause the main charge of the munition to function. A fuze explosive train may consist of a primer, a detonator, a delay, a relay, a lead and booster charge, one or more of which may be either omitted or combined. If the bursting charge is added to the foregoing train it becomes a bursting charge explosive train. A propelling charge explosive train might consist of a primer, igniter or igniting charge, usually black powder, and finally, any of the various types of propellants.

exponential horn. *Electroacoustics.* A horn whose cross-sectional area increases exponentially with axial distance.

EXTENDER, BOOSTER, DEPTH CHARGE. A hydrostatically operated item designed to properly position a depth charge booster in relation to its detonator within a depth charge.*

EXTENDER MECHANISM, UNDERWATER MINE. An item designed to extend the detonator into the booster for arming an underwater mine by means of hydrostatic pressure.

EXTENSION, ARMING WIRE, BOMB. A length of cable with a **SWIVEL AND LOOP ASSEMBLY.**

ARMING WIRE on one end and a snap fastener on the other, designed to extend the length of an ARMING WIRE ASSEMBLY.*

EXTENSION, FUZE, BOMB. A steel tube filled with an explosive material and designed to extend a nose fuze a distance forward of the bomb.*

EXTENSION, SEARCH COIL, UNDERWATER MINE. A metallic item designed to extend the length of the core of a COIL, UNDERWATER MINE.*

EXTENSION, TORPEDO WARHEAD. A metallic cylindrical item, designed to change the center of gravity of a torpedo. It may or may not be explosive filled.*

exterior ballistics. See: ballistics.

exterior ballistic table. Table containing data on the trajectories of projectiles under various conditions. See also: ballistic table.

external aileron. An aileron offset from the wing, i.e., not forming a part of the wing.

extract. To pull an empty cartridge case out of the chamber of a gun.

extraction. Process by which the fired cartridge cases are pulled from the chamber of a gun.

extractor. A part in a gun for removing cartridge cases from the chamber.

In some weapons, as a machine gun or bolt-action rifle, the ejector (which see, sense 1) and the extractor are two separate parts; in other weapons, as a revolver, one part combines both functions of extracting and ejecting, and is called either an 'extractor' or 'ejector.'

EXTRACTOR, DUMMY PROJECTILE, HAND. A tool for use with dummy projectiles in large caliber weapons to engage with the base of the projectile and enable withdrawing the projectile from the seated position.

extractor groove. Groove machined in the base of a cartridge case, a short distance above the head. The groove receives the extractor of the breech mechanism and permits the case to be withdrawn by the extractor. Extractor grooves are used in automatic weapons, in preference to extractor rims (flanges) formed on the cartridge case base. Cf: extractor rim.

extractor pocket. The opening through which the extractor enters the chamber. The extractor pocket may cause extraction difficulties, because of expansion of the case into it.

extractor rim. A rim or flange around the head of a cartridge case to provide a grip for the mechanical extractor of the weapon. Cf: extractor groove.

extrapolate. To make inferences about something that is not known nor understood, by reference to something that is known and understood, and is assumed to correspond in some way with that which is known and understood.

extremely high frequency. (EHF) See: frequency, electronic.

extreme range. Greatest range of a weapon; e.g., the greatest distance a gun will shoot.

extreme spread. In firing accuracy test, the distance between the two shots farthest from each other.

extrusion. *General.* The process of producing parts to a desired form by forcing material under pressure through a die of that form, also the product of this action. Many Ordnance components are produced by extrusion. Propellant grains are formed in this manner, and cut off to length required; projectile blanks are often produced by hot extrusion, and in some cases by cold extrusion. Many aluminum parts are produced as extrusions, however, the cold extrusion of steel components such as cartridge cases and projectiles has only become practicable in recent years.

exudation. The emission of any substance (usually oily, tarry, or gaseous) from an explosive item, generally the results of chemical reaction or pressure due to thermal changes.

eyebrow. A slat on the leading edge of a wing. See: slat.

eyepiece. An optical system used to form a virtual, enlarged image of the real image formed by the objective, and to adapt the light to the eye of the observer. The optical system of the eyepiece usually consists of two lenses, an eye lens and a collective or field lens, but the eyepiece may contain another lens.

F

f/ (*abbr.*). 'For' (in combinations only).

FA (*abbr.*). 1. 'Field Artillery.' 2. 'Frankford Arsenal.'

FAA (*abbr.*). 'Federal Aviation Agency.'

fac (*abbr.*). 'Facility.'

face-hardened armor. See: armor.

face of bolt. The face of a gun bolt is that portion which abuts the base of the cartridge case.

facility. (*fac*) 1. A physical plant or installation, as a base, arsenal, or building, used to make easier the performance of a function. 2. *pl.* The buildings, shelters, roads, utilities, shops, or the like used to facilitate the performance of a function.

facility security clearance. An administrative determination that, from a security viewpoint, a facility is eligible for access to classified information of a certain category (and all lower categories).

factor, load. See: load factor.

factor of safety. A ratio which expresses the extra strength built into a structure or mechanism to give a margin of safety over normally expected loads; e.g., the ratio of the ultimate strength of a piece of material to the maximum permissible stress. See: safety factor.

fail safe. Descriptive of fuze design features whereby a component failure prevents the fuze from functioning.

fair. 1. To streamline a *part* of an aerodynamic body, esp. for reducing wind resistance or drag. 2. Of an external part: To fit into another part so as to present a streamlined surface.

fairing. *Specif.* An auxiliary member or structure on an item that functions to reduce drag; an external surface that has been faired. Cf: fillet.

FAIRING, CLUSTER ADAPTER, ROCKET. An item designed to be mounted on an ADAPTER, CLUSTER, ROCKET shaped so as to reduce the air resistance.*

FAIRING, GUIDED MISSILE TUNNEL SECTION. A tunnel-shaped, tapered item with supporting and/or connecting link(s) designed to close the end(s) of a TUNNEL SECTION, GUIDED MISSILE forming a streamlined surface for reducing air resistance.*

FAIRING, NOZZLE, ROCKET. A cylindrical shaped item, designed to cover the nozzle expansion section of a rocket motor to reduce air resistance.*

FAIRING, UMBILICAL PLUG, ROCKET. A streamlined item or covering designed to protect and produce a smooth outline to the umbilical plug of a rocket. Its primary purpose is to reduce the plug to a form having the least possible head resistance.*

FAIRING, UNDERWATER MINE. An item designed

to be mounted on an underwater mine. It is shaped to reduce or equally distribute air resistance when suspended and launched from an aircraft. It may have collapsible fins.*

Falcon. Name applied to an Air Force air-to-air interceptor type homing missile, employing solid propellant. It is launched from an airplane and automatically homes on the target at supersonic speed. Some models employ radar and some infrared homing.

fallback. That part of the material carried into the air by an atomic explosion that ultimately drops back to the earth or water at the site of the explosion. Cf: fallout.

fallout. The process of precipitation to earth of particulate matter from an atomic cloud, also applied in a collective sense to the particulate matter itself. Although not necessarily so, such particulate matter is generally radioactive. Cf: fallback.

fallout area. The area on which radioactive materials have settled out, or the area on which it is predicted from weather conditions that radioactive materials may settle out.

FALSE TARGET, SUBMARINE. A pyrotechnic item designed to be ejected from a submarine to confuse and disrupt underwater echo ranging equipment and create a bubble wake which can be seen by aircraft and surface vessels.*

Fastax camera. See: camera, Fastax.

FASTENER UNIT, POWDER ACTUATED TOOL. An item consisting of a CARTRIDGE, POWDER ACTUATED TOOL, a fastener, and a sabot designed to be fired from a powder actuated projectile unit driver.*

FBRL (*abbr.*). 'Final bomb release line.'

FCL (*abbr.*). 'Fuze cavity lined.'

F damage. See: damage categories.

feasibility study. The study of a proposed item or technique to determine the degree to which it is practicable, advisable, and adaptable for the intended purpose. This phase may include action of the Ordnance Technical Committee authorizing conduct of the study; it is concluded with the delivery of a report to the Technical Assessment Group or office directing the study.

fed (*abbr.*). 'Federal.'

Federal Aviation Agency. (FAA) A U. S. Government agency with a Director responsible to the President of the United States, replacing the former Civil Aeronautics Administration. The FAA was created and the CAA expired as of midnight December 31, 1958. The FAA includes the Civil Aeronautics Board, which retains its former identity as a legal

regulatory, tariff supervisory, and accident investigation organization. FAA has the former CAA functions as the operating agency at controlled airports and on controlled airways, and in fostering the development of aviation and airmen.

Federal Catalog System. A cataloging system established by the now superseded Munitions Board Cataloging Agency. Now handled by the Assistant Secretary of Defense.

This system provides stock numbers for all items of supply in the Armed Forces. It is designed to standardize the description of supply items, eliminate duplication in procurement, and thereby reduce costs for supply purchase and storage.

Federal Item Identification Number. (FIIN) A series of seven Arabic numbers as follows: three digits, hyphen, four digits (123-4567) requiring eight spaces. The FIIN differentiates concisely and permanently each individual supply item from all other supply items. It is nonsignificant in character, which means that the FIIN will fix the identity of the individual item but will not determine its position or sequence in relation to other items.

federal specification. A procurement specification promulgated by the Federal Government.

Federal Stock Number. (FSN) An identifying number for an item of supply consisting of the applicable 4-digit class code number from the Federal Supply Classification, plus the applicable 7-digit Federal Item Identification Number. See also: **Federal Item Identification Number**; **Federal Supply Classification**.

Federal Supply Classification. (FSC) A 4-digit coding structure for use in classifying items of supply identified under the Federal cataloging program. The first two digits of the code number identify the group, and the last two digits of the code number identify the classes within each group. See also: **Federal Stock Number**.

feedback. 1. *Aerodynamics.* The relay through the controls of aerodynamic forces exerted on control surfaces, and felt by the pilot. 2. *Electricity.* A transfer of energy from the output to the input of the same electrical system.

feed belt. See: **belt, ammunition** (sense 1).

feed chute. A chute or passage through which ammunition is guided into the breech mechanism of a machine gun.

The *fixed feed chute* is a rigid confining track leading to the gun; the *flexible feed chute* is a confining track made up of articulated segments.

feeder. A device that supplies ammunition to a weapon, usually actuated by an automatic or semi-automatic mechanism.

feed mechanism. Device on an automatic or self-loading gun that supplies fresh cartridges as fast as the used ones are ejected.

feeler gage. See: **GAGE, THICKNESS**.

ferret. An aircraft, ship, or vehicle especially equipped for the detection, location, recording, and analyzing of electromagnetic radiation.

Ferri diffuser. See: **diffuser, Oswatitsch or Ferri**.

ferromagnetics. *Electronic computers.* In computer technology, the science that deals with the storage of information and the logical control of pulse sequences through the utilization of the magnetic polarization properties of materials to store binary information.

FERRULE, ARMING WIRE. A fastener sleeve used in an ARMING WIRE ASSEMBLY to secure the loop which retains the swivel loop in its proper position on the arming wire.

FF (*abbr.*) 1. 'Folding fin.' 2. 'Forward firing.'

FFAR (*abbr.*) 1. 'Folding fin aircraft rocket.' 2. 'Forward firing aircraft rocket.'

field artillery. (FA) 1. Artillery mounted on carriages and mobile enough to accompany infantry or armored units in the field. 2. Capitalized, former branch of the Army.

field artillery trainer. Small practice gun and carriage unit used in training field artillery personnel. A field artillery trainer has a telescope and a mechanism for adjusting elevation and deflection.

field chronograph. See: **chronograph**.

field emplacement. Platform, support, or other position for artillery, machine guns, etc., in the field.

field fortification. Fortification constructed in the field to strengthen the natural defenses of the ground features. Field fortifications include foxholes, obstacles, trenches, gun emplacements, etc.

field gun. Field artillery piece; cannon mounted on a carriage for use in the field.

field maintenance. That maintenance authorized and performed by designated maintenance activities in direct support of using organization(s). This category will normally be limited to maintenance consisting of replacement of unserviceable parts, sub-assemblies, or assemblies. See: **maintenance**.

field of fire. (FofF) The area or space that may be filled with effective fire from one or more guns in a given emplacement or mounting.

field of search. *Electronics.* The space that a radar set or installation can cover effectively.

field of view. The open or visible space commanded by the eye. It is the maximum angle of view that can be seen at one time. In an instrument, the *true field of view* is the actual angle of view of the instrument, the maximum angle subtended by any two objects which can be viewed simultaneously. The *apparent field of view* is the size of the field of view as it appears to the eye or the area in which the virtual image is formed; it is equal to the magnifying power of the instrument times the angle of the true field of view.

field piece. Field artillery gun or howitzer; gun mounted on a carriage, for use in the field.

field-strip. To disassemble the major components of a machine gun, cannon, or other firearm for cleaning, inspection, or the like. Cf: **detail-strip**.

field target. Target used in field firing practice. A silhouette of a man is often used. Several types of moving targets are also used.

field weapons. Weapons designed or intended for actual use in the field.

fifth wheel. Flat, round steel plate, swivel-mounted on the frame siderails at the rear of a tractor truck, used to couple a semitrailer to it. Part of a **FIFTH WHEEL ASSEMBLY**.

FIFTH WHEEL ASSEMBLY. A device designed for attaching a semitrailer to a truck tractor or dolly in such a way as to allow free rotation in a horizontal plane and yet prevent tipping.*

fifty. Popular term for 'caliber .50 machine gun.' Used in plural in reference to guns mounted in multiple mounts, as in 'a short burst from his twin fifties.'

fifty-percent zone. Area inclosing the center of dispersion or impact within which one half of all shots fired with the same setting will fall. The zone may consist of a rectangle which includes the ranges of all impacts and the deflections of half the impacts, called the fifty-percent zone for deflection. Similarly, the rectangle which includes the deflections of all impacts and the ranges for half the impacts is called the fifty-percent zone for range. In either case, the center of the rectangle is the center of dispersion. See also: **hundred-percent rectangle**.

fighting compartment. Portion of a fighting vehicle in which the occupants service and fire the principal armament. It occupies a portion of the hull and all of the turret, if any.

FIIN (abbr). 'Federal Item Identification Number.'

fi (abbr). 'Filter.'

filcent (abbr). 'Filter center.'

FILE DESTROYER, INCENDIARY. An explosive device designed for use in destroying combustible file material. Excludes **CRYPTOGRAPHIC EQUIPMENT DESTROYER, INCENDIARY**.*

fill. See: **charge** (sense 2).

filler. 1. An ammunition charge. See: **charge** (sense 2). 2. *Electroacoustics*. In mechanical recording, the inert material of a record compound as distinguished from the binder.

FILLER, HYDRAULIC SYSTEM, GUIDED MISSILE. A specifically designed item mounted on a hand truck consisting of an ethylene oxide cylinder, a hydraulic pump and necessary gages, hoses, and valves required to pressurize the hydraulic system of a guided missile.*

filler, link. See: **LINK FILLER, CARTRIDGE**.

FILLER, MAGAZINE. An item which attaches to the rear top portion of a rifle magazine to retain and position a cartridge clip to facilitate loading.*

fillet. A concave junction formed where two surfaces meet, for example, a faired surface or piece that smooths the flow of air at an internal angle, as at a wing root.

filling. An ammunition charge. See: **charge** (sense 2).

film badge. A photographic film packet to be carried by personnel, in the form of a badge, for measuring and permanently recording (usually) gamma ray dosage.

filter. (fi) 1. An apparatus designed to purify and/or clarify fluids, such as air, oil, water, gas, gasoline, etc., by separating foreign matter. The filtering element may be of a porous material such as charcoal, cotton, paper, fibrous disks, or may be closely spaced metal disks or a series of closely-wound wire. 2. A transparent item designed to be used with a light for the sole purpose of altering the color of the light emitted and/or polarizing the light rays.* 3. An electrical device utilizing resistance, capacitance, inductance, or any combination thereof to reduce current and power at certain frequencies while allowing the comparatively free flow of other currents.

FILTER, ACOUSTICAL. An item specifically designed to absorb certain audio frequencies.*

FILTER, AIR, ELECTROSTATIC. An item designed to remove dust, soot or other small particles from an air stream, by ionization and precipitation.*

filter center. (filcent) Central communications office of an aircraft warning service filter area that gets all reports on the movements of aircraft, sifts the information received, and sends it to information centers.

filter element. Active, replaceable part of a filter, especially of a lubricating or fuel oil filter.

FILTER, LIGHT, OPTICAL INSTRUMENT. An item having two plane-parallel surfaces and consisting of a polarizing material bonded between glass or plastic. This item transmits light in only one plane and is usually used in pairs to vary the light transmitted into or through an optical instrument. Excludes **WINDOW, OPTICAL INSTRUMENT**.*

FILTER, LIGHT, TELESCOPIC INSTRUMENT. An item having two plane-parallel surfaces and used in the telescopic system of an optical instrument to modify the density or spectral intensity of light by absorption. Several filters have varied characteristics are usually mounted in such a manner that any selected filter may be moved in or out of the optical axis as light conditions warrant. Excludes **WINDOW, OPTICAL INSTRUMENT**.*

filter, oil. On motor vehicles, a device whose primary function is to strain the engine oil of some of its contaminating substances such as dust and dirt, by passing it through a filtering element, either a cloth bag, a screen, or a metal strainer. It is generally designed with a bypass valve which permits free circulation of the lubricating oil when the filter elements become clogged and retard oil movement.

filter, oil, automatic. A disk-type oil filter whose cleaning plates are turned automatically when the engine is operating. The plates are turned by means of an oil motor operated by engine-oil pressure. Oil is forced through the filter and then out through the motor, causing the plates to turn.

filter, oil, manual disk. An oil filter in which the oil enters the filter body and is forced up through the filter element of a cartridge. The cartridge consists of a series of fine, closely spaced, metal, slotted disks. The accumulated dirt is removed from the edges of the disks when the cartridge is turned by means of an external filter handle.

filter, oil, military standard. An oil filter adopted for use on automotive vehicles in which all elements, regardless of manufacturer, will fit all filter cases.

fin. A fixed or adjustable vane or airfoil affixed longitudinally to an aerodynamically or ballistically designed body for stabilizing purposes.

final bomb release line. (FBRL) Imaginary line around a defended area or objective over which a bomber should release its last bomb in order to obtain a hit on the far edge of the area or objective. See: **bomb release line.**

final drive. That part of the power train on tractors, truck-tractors, tanks, and tank-like vehicles that carries the driving power to the wheels or sprockets to produce the vehicle motion as they turn.

fin assembly. An assembly of a quantity of metal blades, usually mounted lengthwise on a sleeve, and used on a missile, such as bomb or rifle grenade, to give directional stability.

FIN ASSEMBLY, BOMB. A group of items consisting of a quantity of streamlined metal blades mounted on a sleeve with or without supporting braces or shrouds.*

FIN ASSEMBLY, 81 MILLIMETER CARTRIDGE. A group of vanes or airfoils mounted longitudinally on a sleeve, designed to be assembled to the rear end of an 81 millimeter projectile to provide stabilized flight. Also may provide for reception of ignition cartridge and propellant increments.

FIN ASSEMBLY, 60 MILLIMETER PROJECTILE. A group of vanes or airfoils mounted longitudinally on a sleeve, designed to be assembled to the rear end of a 60 millimeter projectile to provide stabilized flight. Also may provide for reception of ignition cartridge and propellant increments.

FIN ASSEMBLY, PRACTICE BOMB. A FIN ASSEMBLY, BOMB for use with practice bombs.

FIN ASSEMBLY, RIFLE GRENADE. A group of vanes or airfoils mounted longitudinally on a sleeve, designed to be assembled to the rear end of a rifle grenade to provide stabilized flight.

FIN ASSEMBLY, ROCKET MOTOR. A group of vanes or airfoils mounted longitudinally on a suitably designed sleeve, arranged so that the complete assembly can be securely attached to the rear end of a rocket motor to provide stabilized flight.

fin, bomb. A fin (which see) attached to a bomb in order to afford directional stability.

fin, box-type. A fin assembly (which see) designed like a box, open at both ends.

fineness ratio. The ratio of the length of a streamlined body, as that of a fuselage, airship hull, or the like, to its maximum diameter.

fine sight. Adjustment of the sight of a gun so that only the tip of the front sight can be seen through the notch of the rear sight. Cf: **course sight.**

FIN KIT, 5 INCH ROCKET. A group of items required to modify a 5 inch rocket originally made for use with one type of launcher to permit its use on a launcher of some other type.

fin lock nut. See: **NUT, FIN LOCK, BOMB.**

FIN, 318 MILLIMETER ROCKET. One of a group of vanes or airfoils designed to be assembled longitudinally to the rear end of a 318 millimeter rocket, to provide stabilized flight.

FIN, 762 MILLIMETER ROCKET. One of a group of vanes or airfoils designed to be assembled longitudinally to the rear end of a 762 millimeter rocket, to provide stabilized flight.

FIN REINFORCING ASSEMBLY. An assemblage of components required to reinforce a FIN ASSEMBLY, BOMB.

fin stabilization. Method of stabilizing a projectile, as a rocket, bomb, or missile, during flight by the aerodynamic use of protruding fins.

FIN, UNDERWATER MINE. An item designed to stabilize an underwater mine after its launching.*

fire. 1. The discharge of a gun, launching of a missile, or the like. 2. The projectiles or missiles fired.

fire adjustment. Correcting the elevation and direction of a weapon, or regulating the explosion time of its projectile, so that the projectile will strike or burst at the desired point. Fire adjustment for automatic weapons is an operation which is continuous from the instant the first rounds reach the vicinity of the target until command 'cease firing' is given.

firearm. 1. In a general sense, a gun, sense 1 (which see). 2. *Specif.* A small arm, as a pistol or rifle, designed to be carried and used by an individual.

fire attack. An air attack with incendiary bombs.

fireball. The luminous sphere surrounding a nuclear explosion, consisting of heated air.

fire bomb. See: **BOMB, FIRE.**

fire control. Control over the direction, volume, and time of fire of guns or launchers by the use of certain electrical, electronic, optical or mechanical systems, devices or aids; a fire control system.

fire control equipment. Equipment required and used to directly aim guns or controlled missiles at a particular target. Fire control equipment includes all instruments used in calculating and adjusting proper elevation and deflection of guns and missiles in flight. Included are such items as radars, telescopes, range finders, predictors, directors, other computers, power plants, and communication control systems connecting these elements.

fire control grid. System of lines that divide a military map into squares the distance between any two parallel lines representing 1,000 yards or 1,000 meters, depending on the type map. Maps using the fire control grid are of sufficiently large scale to be useful in fire control.

fire control instrument. Aiming circle, range finder, compass, telescope, or other instrument used in fire control.

fire control materiel. Instruments and apparatus employed in the direction, adjustment, and observation of fire from weapons.

fire control radar. Radar equipment used in a fire control system.

fire control system. A group of fire control instruments and/or equipment which receives data as to position of target, calculates future position, correlates the information and controls the aiming of a weapon to bring fire upon the target. The system is composed of electronic instruments and equipment, power units, interconnecting cables, etc.

FIRE CONTROL SYSTEM, ANTI-AIRCRAFT. A grouping of electromechanical components designed to detect, track, and compute the necessary firing data for controlling anti-aircraft weapons on the basis of optical and/or radar observation of a target. Excludes RADAR SET and DEFENSE SYSTEM, ANTI-AIRCRAFT.*

FIRE CONTROL SYSTEM, FIELD ARTILLERY. A grouping of electromechanical components which detect hostile weapons or targets. It computes and transmits firing data to a fire direction center for laying of weapons.*

fire control system, integrated. A system which combines target acquisition and tracking data computation, gun laying and firing, primarily using electronic means assisted by electromechanical devices.

fire coordination. The planning and execution of fire so that targets are adequately covered by a suitable weapon or groups of weapons.

FIRECRACKER. A cylindrical shaped item containing an explosive and a fuse. It is used to simulate the noise of an explosive charge.*

fire direction. Tactical employment of fire power, the exercise of tactical command of one or more units, in the selection of targets, the concentration or distribution of fire, and allocation of ammunition for each mission.

fire direction center. See: DEFENSE SYSTEM, ANTI-AIRCRAFT.*

fire direction net. Communication system linking observers, liaison officers, air observers, and the firing batteries with the fire direction center for the purposes of fire control.

FIRE DIRECTION SET, ARTILLERY. A collection of special purpose equipment and supplies for use by artillery fire control troop units such as observation batteries, command posts and similar units in plotting artillery fire by the flash ranging method and related operations. Includes plotting sheets, plotting scale and the like.*

FIRE DIRECTION SET, TANK AND TANK DESTROYER WEAPONS. A collection of specialized equipment and supplies for use by tank and tank destroyer companies in computing and plotting weapons' fire control data and related problems.*

fire effect. Result of firing on enemy personnel and materiel.

fire for adjustment. Fire delivered for the purpose of determining firing data that will place the center of impact or burst on the desired portion of the target.

fire for effect. Fire which is delivered after the center

of impact or burst is within the desired distance of the target or adjusting point.

fire interrupter. For aircraft guns, a device (usually an electrical switch mechanically actuated) which interrupts firing of a weapon.

fire point. The temperature, as determined by testing, of a lubricating oil when it gives off a vapor that will continue to burn steadily. Cf: flash point.

firepower. 1. The capability to deliver fire. 2. The fire itself, or the quantity or effectiveness of fire delivered: any explosive or missile that wreaks damage upon the target against which directed. Said of guns or rockets, or of aircraft, units, etc., armed with guns or rockets.

fire raid. An air raid with incendiary or fire bombs.

fire roe. A powder which, when added to gasoline, gelatinizes or thickens it. See also: napalm; THICKENER, INCENDIARY OIL.

fire superiority. Fire with greater effect than that of the enemy because of its greater accuracy and volume. Fire superiority makes possible advances against the enemy without heavy losses.

fire support. The support or protection given forces in direct contact with the enemy by ground or naval guns or by aircraft engaging in close air support.

fire unit analyzer. An instrument for analyzing the effectiveness of an anti-aircraft fire unit against hostile aircraft or missiles under the conditions stated on the face of the analyzer.

FIRING AND ARMING MECHANISM, PRACTICE DEPTH CHARGE. A hydrostatically operated mechanism designed to contain a method of arming and a detonator for firing a practice depth charge. It may or may not contain a detonator.*

firing azimuth. Horizontal direction in which a gun or launcher is pointed for firing, expressed as an azimuth.

firing base. Part of the mechanism in some cannon that supports the gun carriage when it is in position for firing.

firing button. A button or switch for firing guns or rockets.

firing chamber. A combustion chamber, esp. in a rocket motor or rocket engine.

firing circuit. Electric circuit, by means of which a weapon, rocket, missile or the like is fired; firing control circuit.

firing data. All data necessary for firing a weapon at a given objective. Such data may be determined by computation and then transmitted as verbal commands, or may be applied electromechanically by one of the several types of directing devices.

firing device. A mechanism designed to detonate the main charge of explosives contained in booby traps, antipersonnel mines, antitank mines and demolition charges. There are several types of either metallic or nonmetallic construction: pressure, pull, release, or combination thereof. See also: FIRING DEVICE, DEMOLITION.

FIRING DEVICE, DEMOLITION. An item designed

to detonate a blasting cap(s) or a detonator by mechanical means such as release of a spring propelled striker or firing pins.*

FIRING DEVICE, EXPLOSIVE ACTUATOR. A semiautomatic item designed to be initiated by an external force. Its function is to detonate an explosive actuator cartridge by mechanical means, for the actuation of mechanical contrivances.*

FIRING DEVICE SET, DEMOLITION. A collection of demolition firing devices, with suitable packing and carrying means, to enable preparation of demolition charges, and booby traps in the field. See also: **FIRING DEVICE, DEMOLITION.**

firing elevation. See: **quadrant elevation.**

firing interval. Period of time between firing one shot and the next.

firing jack. Adjustable device which stabilizes and levels certain mobile artillery weapons while the weapons are in firing position.

firing lock. A removable part of the **firing mechanism** in some weapons. Incorporates the firing pin and the mechanism which drives it against the primer.

firing mechanism. A mechanism for firing a primer. The primer may be for initiating the propelling charge, in which case the firing mechanism forms a part of the weapon. If the primer is for the purpose of initiating detonation of the main charge, the firing mechanism is a part of the ammunition item and performs the function of a fuze.

FIRING MECHANISM, DEPTH CHARGE. An electronic item designed to initiate the detonation of a depth charge.*

firing mechanism, electric. Firing mechanism using a firing magneto, battery or a. c. power in circuit with an electric primer. One side of the line is connected by an insulated wire to the primer, and the other side is grounded to the frame of the weapon.

firing mechanism, electric percussion. Firing mechanism which fires the primer electrically or by a percussion blow.

firing mechanism, percussion. Any firing mechanism which fires the primer by percussion.

firing mechanism, percussion hammer. Firing mechanism in which a hammer, actuated by a pull of a lanyard, strikes the firing pin and fires the weapon.

FIRING MECHANISM, ROCKET. An item designed to initiate the detonation of a rocket.*

FIRING MECHANISM, UNDERWATER MINE. An item designed to initiate the detonation of an underwater mine. It may be actuated by an acoustic signal, physical impact, hydrostatic pressure and/or magnetic influence. It may contain explosive components.*

firing order. The sequence in which the power strokes take place in the cylinders of an engine.

firing pin. See: **PIN, FIRING.**

firing platform. See: **launching platform.**

firing point. Location from which fire is delivered in target practice.

firing position. Position of a weapon ready for firing, as opposed to **traveling position.**

firing range. 1. An area or site designated for firing practice. 2. The range or distance from a target at which a gun can be fired with effective results, as in 'he was within firing range'; this range considered as a capability of the gun.

FIRING STATION, GUIDED MISSILE. A self-contained electronic item which provides remote control of guided missile functions prior to and including firing. It may include an emergency propellant shutoff system.*

firing table. (ft) Table or chart giving the data needed for firing a gun accurately on a target under standard conditions and also the corrections that must be made for special conditions, such as winds or variations of temperature. See also: **ballistic table.**

firing table elevation. The angle between the axis of the bore and the horizontal when the piece is laid to fire at a given range under conditions that are accepted as standard.

firing time. The period of time during which a weapon is fired. See: **effective firing time.**

first-echelon maintenance. Formerly, maintenance performed by the user or users of a piece of equipment. Now a part of organizational maintenance.

first fire. The igniter used with pyrotechnic devices. Consists of first fire composition, loaded in direct contact with the main pyrotechnic charge. The ignition of the igniter or first fire is generally accomplished by fuze action. See also: **first fire composition.**

first fire composition. A pyrotechnic composition, compounded to produce a high temperature, preferably with creation of slag to give heat capacity. The composition is required to be readily ignitable, and capable of being pressed into a strong, solid mass. See also: **first fire.**

fission. Of radioactive material: To split apart within the atomic nucleus, as in 'cobalt would neither fission nor fuse.'

fissionable. Of a material such as uranium: Subject to nuclear fission.

fission bomb. A bomb intended to derive its explosive force from nuclear fission. See: **bomb, atomic.**

fission, nuclear. The splitting of an atomic nucleus, as by neutron bombardment. See also: **bomb, atomic.** Cf: **fusion, nuclear.**

fissuring. An undesired cracking or splitting of solid propellants, resulting in increased burning areas and increased rate of gas evolution.

fit. The relationship existing between two mating parts with respect to the amount of *clearance* or *interference* which is present when they are assembled.

A *clearance fit* is a fit between mating parts having limits of size so prescribed that a clearance always results upon assembly.

An *interference fit* is a fit between mating parts having limits of size so prescribed that an interference always results upon assembly.

A *transition fit* is a fit between mating parts having limits of size so prescribed as to partially or wholly overlap, so that either clearance or interference may result upon assembly.

fix. An accurate determination of a position relative to the earth's surface. See: **radio fix.**

fixed. (fxd) With reference to armament signifies a permanent emplacement. Not designed to be moved. Not mobile.

fixed ammunition. Ammunition with primer and propellant contained in a cartridge case permanently crimped or attached to a projectile. Loaded into the weapon as a unit. Usually termed a 'cartridge.'

fixed artillery. Artillery weapons permanently installed on land and sea frontiers for the protection of important areas; artillery of position.

fixed echo. A radar echo that is caused by reflection from a fixed object such as a terrain form or building visible to the radar set. See: **radar clutter.**

fixed emplacement. Fixed setting for a gun. A fixed emplacement is usually made of reinforced concrete, with the base plate and base ring set in the concrete and bolted down. Also called permanent emplacement.

fixed fin. A nonadjustable vane or airfoil affixed longitudinally to an aerodynamically or ballistically designed body for stabilizing purposes.

fixed focus. The term applied to instruments which are not provided with means for focusing. Such instruments, generally, have a wide range of accommodation which permits them to be used by the majority of observers.

fixed gun. *Specif.* An aircraft machine gun mounted rigidly to the aircraft, and aimed by moving the aircraft, as distinguished from a flexible gun.

fixed mount. See: **fixed emplacement.**

fixed price contract. Type of contract whereby the contractor is paid a stated price which is determined at the time the contract is executed and in advance of performance. Special clauses are often inserted in Department of the Army fixed price contracts to provide for the adjustment of price during the life of the contract.

fixed sight. A nonadjustable gunsight.

fixed target. A target incapable of being moved or of moving, like a city, factory, or surrounded troops.

fixture. *Mechanical.* A device securely held, either by its own weight or by a clamping device(s), to a machine, bench or piece of work to hold part(s) during machining, test, or assembly operations. It may be provided with gages, stops, pressure connections, etc., but must not contain devices which guide, cut, grind or perform a production operation.*

FIXTURE, TRACK CONNECTING, FULL TRACKED VEHICLE. A fixture used to pull together two track ends, of a full tracked vehicle, for the purpose of connection. May also be used for holding the tension of a track while replacing a link.*

flail tank. Specially constructed tank equipped with a flailing device, consisting of chain flails attached to a roller powered by the tank engine, employed to detonate antitank mines.

flak. [German *Flieger Abwehr Kanone* (antiaircraft cannon).] 1. Explosive or exploding missiles fired

from antiaircraft cannon. 2. Antiaircraft cannon, esp. when used as an adjective, as in *flak battery, flak installation.*

flak analysis. The examination and study of flak intelligence to determine the nature, effectiveness, or probable effectiveness of enemy antiaircraft defenses.

flak computer. Device for determining flak effectiveness.

flak curtain. See: **CURTAIN, FLAK PROTECTIVE.**

flak intelligence. Intelligence on enemy ground defenses against aircraft.

flak jacket. A jacket or vest of heavy fabric containing metal plates, designed esp. for protection against flak. The usual type of flak jacket covers the chest, abdomen, back, and genitals, leaving the arms and legs free. Also called 'flak vest.' See: **ARMOR, BODY, FRAGMENTATION PROTECTIVE.**

flame bomb. See: **BOMB, FIRE.**

flame holder. See: **inner liner.**

flameout. The extinguishment of the flame in a reaction engine esp. in a jet engine. See: **brennschluss; burnout** (sense 2).

flame thrower. An offensive weapon used to project ignited fuel, equally capable of causing casualties to personnel and/or destruction of material.*

FLAME THROWER, MECHANIZED, AUXILIARY ARMAMENT. A flame thrower designed to serve as auxiliary armament on a combat vehicle. Excludes **FLAME THROWER, MECHANIZED, MAIN ARMAMENT.***

FLAME THROWER, MECHANIZED, MAIN ARMAMENT. A flame thrower which serves as the principal offensive armament on a combat vehicle with which it is integrally designed. It usually approximates the silhouette of the unmodified vehicle by adapting the flame gun to fire through a specially designed dummy tube resembling the vehicle's standard armament. Excludes **FLAME THROWER, MECHANIZED, AUXILIARY ARMAMENT.***

flame tube. See: **inner liner.**

flammable. Combustible; easily ignited.

In usage, 'flammable' is preferred to 'inflammable.'

In the latter, the 'in-' prefix may be mistaken for the meaning 'not.' See: **nonflammable.**

flank observation. Observation of fire from a place on, or near, the flank of the target. The angle at the target between the gun and the observer is between 75° and 105°.

flap. 1. Any control surface, such as a speed brake, dive brake, dive-recovery brake, or the like, used primarily to increase the lift or drag on an airplane, or to aid in recovery from a dive. 2. Any rudder attached to a rocket, and acting either in the air or within the jet stream. See: **carbon fin.**

flap angle. See: **angle of flap (and flaperons).**

flaperon. A kind of control surface used both as a flap and as an aileron.

flaperon angle. See: **angle of flap (and flaperons).**

flap, split. A hinged plate forming the rear upper or lower portion of an airfoil. The lower portion may be deflected downward to give increased lift and drag; the upper portion may be raised over a portion of the wing for the purpose of lateral control.

flare. 1. A pyrotechnic item designed to produce a single source of intense light for purposes such as target and/or airfield illumination. 2. *Electronics.* An overly-bright return on a radarscope, which loses definite shape because of its excessive brightness. 3. *Rocketry.* The flared inside curve of some types of rocket nozzles.

FLARE, AIRCRAFT. A pyrotechnic item, for use from aircraft, designed to produce a single source of intense light for purposes such as target and/or airfield illumination.

flare, airport. A surface flare consisting of an illuminant candle fitted with a means of ignition, designed to identify and illuminate an airport in the absence of other illumination. See also: **candle; FLARE, SURFACE.**

flareback. A rearward escapement of flame or gas from a gun. See: **backfire** (sense 1).

flare chute. Popular name for parachute attached to a flare.

flare, float. A signal launched from aircraft, to mark a location at sea. It floats on the surface and emits smoke and flame for up to one hour. See also: **FLARE, SURFACE.**

flare, guide. An electrically ignited FLARE, AIRCRAFT for attachment to an aerial bomb, which produces very bright light, either white or colored, to mark the position of the bomb and permit its guidance to the target.

FLARE, GUIDED MISSILE. A pyrotechnic item designed to produce a single source of intense light for the purpose of visually tracking a guided missile during its flight to a target. Excludes **TRACER, GUIDED MISSILE.***

flare, illuminating. A general term, indicating a pyrotechnic device which produces a brilliant, single source light.

FLARE, INERT, AIRCRAFT. A FLARE, AIRCRAFT, without a pyrotechnic component.*

flare, magnesium. A general term indicating a flare using magnesium as the illuminating agent.

FLARE MIXTURE. A pyrotechnic composition, compounded to produce a brilliant light either white or colored.

flare, parachute. Pyrotechnic device attached to a parachute and designed to provide intense illumination for a short period. May be discharged from aircraft or from the surface.

FLARE, PARACHUTE, HAND FIRED. A complete, self-contained device which is fired from the hand, and which provides a rocket projected, parachute borne, pyrotechnic light.*

flare pistol. See: **PISTOL, PYROTECHNIC.***

flare, reconnaissance. Former terminology for a

FLARE, AIRCRAFT used in air reconnaissance to light up the ground.

FLARE, SURFACE. A pyrotechnic item for use in surface positions, ground or water, designed to produce a single source of intense light for purposes such as illumination of airport runways and warning of infiltrating enemy troops.

flare, trip. A FLARE, SURFACE which is actuated by, and thus serves as a warning of the approach of, infiltrating enemy troops. It is boobytrapped and, in one type, is attached to a parachute which is projected into the air.

flash. Indicates, in the case of simulators and other pyrotechnic items, that item is intended to produce a flash. See also: **SIMULATOR, FLASH, ARTILLERY.**

flashback fuze. See: **fuze, spitback.**

flashback tube. See: **spitback tube.**

flash-bang. The time interval between visual observation of the flash of a weapon being fired and the auditory perception of the sound of the discharge proceeding from the same weapon.

flash bomb. See: **BOMB, PHOTOFLASH.**

flash depressor. A substance used to reduce the flash from a rocket motor.

flash fuse. See: **squib** (sense 2).

FLASH HIDER. A metallic cone and/or flat disks which are attached to the muzzle of the gun to conceal the flash when the gun is fired and to prevent temporary blindness of the gun crew while firing.*

flashless. (fshs) Said of a propellant or a propelling charge that does not produce a muzzle flash in the weapon for which intended.

flashless nonhygroscopic. (FNH) Said of a propellant that does not readily absorb or hold moisture and does not produce a flash in the weapon for which intended.

flash point. The temperature, as determined by testing, of a fuel or oil when it gives off a vapor that will flash or ignite momentarily. Cf: **fire point.**

flash radiography. Method of high-speed X-ray photography. Used in analysis of ammunition functioning.

flash ranging. Finding the position of the burst of a projectile or of an enemy gun by observing its flash. See also: **flash ranging; sound and flash ranging.**

flash ranging adjustment. Correcting friendly artillery fire on the basis of observation and location of the flash of friendly shell bursts.

flash reconnaissance. Observation from groundposts or from aircraft to locate enemy gun positions by the flashes of enemy guns.

flash reducer. Any material issued separately for use with a propelling charge to reduce its muzzle flash. See: **REDUCER, FLASH, PROPELLING CHARGE.** Cf: **flash suppressor.**

flash suppressor. Material incorporated into a propellant to suppress flash. Differs from a flash reducer which is issued separately for use with the propelling charge. Cf: **flash reducer.**

flat base. Indicates projectile of flat base type, i.e., base is cylindrical. Sometimes called 'square base.' Cf: boattail.

flat nose. Popular term for missiles used against submarines, designed to prevent ricocheting on water impact.

flat spin. Term used to describe the motion of a projectile which has a slow spin and a very large angle of yaw. It happens most frequently in fin stabilized projectiles with some spin-producing moment, when the period of revolution of the projectile coincides with the period of its oscillation. It is sometimes observed also in bombs and in unstable spinning projectiles.

flat trajectory. A trajectory which is relatively flat, that is, described by a projectile of relatively high velocity. Often used to describe the trajectory of a rifle or gun (sense 2) as opposed to that of howitzers and mortars.

flat trajectory fire. Gunfire delivered at such a range, or with such velocity and elevation setting, that the path of the projectile in flight is almost flat, rather than curved; flat fire. Cf: curved fire.

flat trajectory weapon. Gun that fires projectiles at such velocity that they travel in an almost straight path with little curve above the ground. A machine gun or a rifle is a flat trajectory weapon at common battle ranges.

flechette. [French, 'a small arrow.'] 1. An aerial dart. 2. A small fin stabilized missile, a large number of which can be loaded in artillery canister. See also: canister (sense 1).

fleeing target. Moving target that remains within observing or firing distance for such a short period that it affords little time for deliberate adjustment and fire against it; transient target. Fleeing targets may be aircraft, vehicles, marching troops, etc.

flexible gun. A gun, esp. a machine gun, mounted in an aircraft turret or on a post, tripod, or other mount in such a manner that the gun may be swung in both a vertical and horizontal plane. Distinguished esp. from a fixed gun.

flhs (abbr). 'Flashless.'

flight path. The path described or followed by an aircraft, guided missile, or the like in the air.

flight path angle. See: angle, flight path.

flight path computer. A computer including all of the functions of a course line computer and in addition providing means for controlling the altitude of the aircraft in accordance with any desired plan of flight.

flight path deviation indicator. An instrument providing an indication of deviation from flight path.

flight path slope. See: angle, flight path.

flight test. A performance test of aeronautical equipment, including aircraft or any equipment used on aircraft, or of a person in flight.

The flight test is a regular part of a periodic inspection of aircraft, but is also a normal procedure in testing new equipment, esp. on test flights.

flight track. The track made by a flying aircraft or missile.

flint glass. *Optics.* One of the two principal types of optical glass, the other being *crown glass*. Flint glass is softer than crown glass, has a higher index of refraction, and higher dispersion. See: compound lens.

flip-flop. *Electronic computers.* An electronic circuit having two stable states and ordinarily two input terminals (or types of input signals) each of which corresponds with one of the two states. The circuit remains in either state until caused to change to the other state by application of the corresponding signal.

floating piston. *Specif.* Piston, without piston rod, which separates the oil from the gas in a recuperator cylinder.

floating reticle. A reticle the image of which is movable within the field of view.

FLOAT, UNDERWATER MINE. A buoyant item of various shapes and sizes designed to contain and properly position a component of an underwater mine. It is secured to the underwater mine by means of a desired length of cable or chain.*

FLOODER ASSEMBLY, UNDERWATER MINE. A group of items assembled as one unit designed to actuate a detonator within a PLUG, FLOODER, UNDERWATER MINE.*

flow, mass. See: mass flow.

flow, one-dimensional. Flow in which it is assumed that static pressure, Mach number, and other characteristics are uniform over any cross section perpendicular to the direction of fluid flow. Interpretations based on this assumption, although not exact, work out remarkably well in problems of duct flow.

flow, three-dimensional. A flow in which three Cartesian coordinates are necessary to specify conditions. Examples are flow around a finite wing or around an inclined body of revolution. See: flow, two-dimensional.

flow, two-dimensional. A flow in which two Cartesian coordinates are sufficient to specify conditions. The fluid undergoes a change of direction in one plane only, at right angles to the direction of flow, such as in the case of flow over a wing of indefinite span, and wind tunnel tests are facilitated by observations with uniform conditions along any line perpendicular to the windows of the tunnel.

flr (abbr). 'Filler.'

fluid friction. The type of friction that exists when two bearing surfaces are well covered with a lubricating fluid. Cf: boundary friction.

fluted liner. In shaped charge ammunition, a liner (which see) with grooves (flutes) on one or both of the surfaces.

flutter. 1. A vibrating and oscillating movement of a wing, control surface, or the like, caused by aerodynamic forces acting upon an airfoil or surface having elastic and inertial qualities. 2. *Electroacoustics.* a. Distortion due to variations in

- loss resulting from the simultaneous transmission of a signal at another frequency. b. A similar effect due to phase distortion. c. Distortion which occurs in sound reproduction as a result of undesired speed variations during the recording, duplicating, or reproducing.
- flutter echo.** *Electroacoustics.* A rapid succession of reflected pulses resulting from a single initial pulse.
- flying angle.** The acute angle between the longitudinal axis of an aircraft and the horizontal in normal level flight, or the angle of attack of a wing in normal level flight.
- flying bomb.** See: **bomb, flying.**
- flying missile.** A self-propelled or robot missile, as a guided missile or ballistic missile. *Popular.*
- flying range.** The capability of an aircraft or guided missile that indicates how far it can fly under given operating conditions.
- flying saucer.** A popular name given any of several saucer-shaped, unidentified flying objects reported as having been seen.
- FM (abbr).** 1. Chemical agent, 'titanium tetrachloride' (smoke). 2. 'Field Manual.' 3. 'Frequency modulation.'
- FM smoke.** See: **CHEMICAL AGENT, TITANIUM TETRACHLORIDE.**
- FNH (abbr).** 'Flashless nonhygroscopic.'
- focus.** *Optics.* 1. To adjust the eyepiece of a telescope so that the image is clearly seen by the eye, or to adjust the lens of a camera so that a sharp, distinct image is seen on the ground glass. 2. The process of adjusting the distances between optical elements.
- focusing nut.** *Optics.* A threaded nut to which the eyepiece of a telescope is attached to permit the eyepiece to be moved in or out to accommodate the instrument to eyesight variations. It usually carries a diopter scale to permit presetting of the instrument.
- focusing sleeve.** *Optics.* A knurled sleeve which is rotated to shift the positions of the erectors with relation to the objective and eyepiece to focus the instrument or to change its magnification.
- FofF (abbr).** 'Field of fire.'
- FOG OIL.** A refined mineral oil specifically prepared for use in smoke generators, characterized by its ability to be dispersed into the air as extremely small particles in the form of a smoke.*
- folding fin.** (FF) A fin on a rocket, missile, or the like, hinged to permit outward extension when the missile is in flight.
- follow-the-pointer indicator.** Scale, on the mount of some types of artillery, that receives and registers firing data transmitted over a remote control system. The gun is kept properly aimed when its adjustment dials are matched with the readings on the indicator.
- follow through.** Material which follows the jet of a shaped charge through the hole formed in the target. Used as noun or adjective.
- force.** *Interior ballistics.* The product of: the isochoric adiabatic flame temperature, the number of mols produced on combustion of a unit weight of propellant, and the universal gas constant. Used in connection with rocket propellants. Usually expressed in foot pounds per pound. See also: **relative force.**
- forcing cone.** Tapered beginning of the lands at the origin of the rifling of a gun tube. The forcing cone allows the rotating band of the projectile to be gradually engaged by the rifling thereby centering the projectile in the bore.
- foraging depth.** Maximum depth at which a particular vehicle can operate in water.
- fore-and-aft axis.** The longitudinal axis of a plane or missile.
- forearm.** Wooden device on the barrel end of a rifle to protect the firer from the heat of the gun barrel.
- fork.** Change in elevation of artillery required to shift the center of impact in range by four probable errors.
- FORK LIFT, TRACTOR MOUNTING.** A power-driven fork-type elevating unit designed to be mounted on a tractor. May be cable- or hydraulically-operated. Used for lifting, transporting, and stacking material.*
- FORK, LIFT TRUCK.** A one piece, steel arm or prong formed at approximately 90 degree angle, the vertical portion of which attaches to the lifting and lowering mechanism of a TRUCK, FORK LIFT and the horizontal portion acts as a finger to hold the material being handled.*
- fork lift truck.** See: **TRUCK, LIFT, FORK.**
- formal advertising.** The formal solicitation of competitive sealed bids through advertisement and the award of contracts to the lowest responsible bidder; price, and other factors considered.
- formal contract.** Contract which is contained in a written contractual instrument executed by both the Government and a contractor, or by a contractor and a subcontractor.
- formation bombing.** Bombing by aircraft in formation; pattern bombing.
- form coefficient.** See: **form factor.**
- form dimension.** A dimension which specifies a feature of an object which cannot be properly defined by dimensions of size or location. Examples of form dimensions are the angle of the frustrum of a cone, the involute angle of a gear, and the angle of a thread.
- form drag.** 1. The drag from all causes resulting from the particular shape of a body relative to its direction of motion, as of fuselage, wing, or nacelle. 2. *Restrictive.* At supersonic speed, the drag caused by losses due to shock waves. This drag is exclusive of losses due to skin friction.
- form factor.** Factor introduced into the ballistic coefficient of a projectile, based on the shape of the projectile. Sometimes called 'coefficient of form.' See also: **ballistic coefficient.**
- form function.** The mathematical expression for the relationship between the fraction of the propellant

burned and the distance that each burning surface has regressed.

form, streamline. The form of a body so shaped that the flow about it tends to be a streamline flow.

fort. (ft) 1. Permanent post as opposed to a camp, which is a temporary installation. 2. Land area within which harbor defense units are located. 3. Strong, fortified building or place that can be defended against an enemy.

fortification. (ftn) 1. A structure or earthworks, usually heavily armed, constructed as a defense; a fortified place or position. 2. The act or art of fortifying.

fougasse. A mine constructed so that upon explosion of the charge, pieces of metal, rock, gasoline, or other substances are blown in a predetermined direction.

fouling. Deposit that remains in the bore of a gun after it is fired.

four-by-four. In regard to motor vehicles, four wheels, of which four are driving wheels, dual wheels being considered as one wheel. It is usually written 4 x 4.

four-by-two. In regard to motor vehicles, four wheels, of which two are driving wheels, dual wheels being considered as one wheel. It is usually written 4 x 2.

four-cycle engine. A four-stroke-cycle engine (which see).

four-stroke-cycle engine. An internal combustion, piston engine requiring four strokes of each piston to complete a cycle. Cf: **two-stroke-cycle engine.**

This type of engine is often called a 'four-cycle engine'; consequently a misunderstanding of the word 'cycle' has arisen, some users of the term confusing 'cycle' with 'stroke.' The four piston strokes necessary to complete a cycle in the four-stroke-cycle engine are the intake stroke, compression stroke, power stroke, and exhaust stroke.

fourth-echelon maintenance. The former term for depot maintenance (which see).

four-wheeled planimeter. See: **ballistic integrator.**

foxhole. Small pit used for cover, usually for one or two men, and so constructed that an occupant can fire effectively from it.

FP (abbr). 'Flashless propellant.'

fps (abbr). 'Feet per second.'

frag (abbr). 'Fragment; fragmentation.'

frag bomb. Short for 'BOMB, FRAGMENTATION.'

frag cluster. Short for 'CLUSTER, FRAGMENTATION BOMB.'

fragment. (frag) 1. A piece of an exploding or exploded bomb, projectile or the like. 2. To break into fragments.

fragmentary bomb. A fragmentation bomb. Not preferred terminology. See: **BOMB, FRAGMENTATION.**

fragmentation. (frag) Term applied to ammunition, indicates that item is primarily intended to produce a fragmentation effect.

fragmentation bomb. See: **BOMB, FRAGMENTATION.**

fragmentation grenade. See: **grenade, fragmentation.**

fragmentation test. Test conducted to determine the number and weight distribution, and where the method used permits, the velocity and spatial distribution of the fragments produced by a projectile or other munition upon detonation. Recovery of fragments, without determination of velocity or spatial distribution can be accomplished by fragmenting in sand or sawdust, or over water. Determination of velocity and spatial distribution requires elaborate recovery means and instrumentation.

fragment emission. In terminal ballistics, the pattern of the fragments upon leaving the exploded projectile or other munition including the number and direction, weight and velocity of each.

frame. 1. *Firarms.* A receiver (sense 3). 2. An airframe. 3. Any structural piece, other than a bulkhead, designed chiefly to support the longitudinal members or skin of a fuselage, float, or hull.

frangible bullet. A brittle plastic or other nonmetallic bullet for firing practice which, upon striking a target, breaks into powder or small fragments without penetrating. Frangible bullets are usually designed to leave a mark at the point of impact.

frangible grenade. See: **grenade, frangible.**

Frankford Arsenal. (FA) Field installation of the Ordnance Corps located at Philadelphia, Pennsylvania, charged with responsibility for development, procurement and associated activities for off-carriage fire control systems, and on-carriage fire control components, also has responsibilities with respect to small arms ammunition, artillery cartridge cases, projectiles and mechanical time fuzes, standard inspection gages and measuring equipment, and metallurgical research and engineering. Also responsible for development of recoilless rifles and ammunition therefor. Location of Pitman-Dunn Laboratories.

freedrop. 1. To airdrop supplies or equipment without parachute. 2. An act or instance of freedropping.

free field. *Electroacoustics.* A field (wave or potential) in a homogeneous, isotropic medium free from boundaries. In practice, a field in which the effects of the boundaries are negligible over the region of interest.

The actual pressure impinging on an object (e.g., electroacoustic transducer) placed in an otherwise free sound field will differ from the pressure which would exist at that point with the object removed, unless the acoustic impedance of the object matches the acoustic impedance of the medium.

free-field current response. *Electroacoustics.* Of an electroacoustic transducer used for sound reception, the ratio of the current in the output circuit of the transducer when the output terminals are short-circuited to the free-field sound pressure existing at the transducer location prior to the introduction of the transducer in the sound field. The free-field current response is usually expressed in decibels, viz., 20 times the logarithm to the base 10 of the quotient

of the observed ratio divided by the reference ratio, usually 1 ampere per microbar. The free-field response is defined for a plane progressive sound wave whose direction of propagation has a specified orientation with respect to the principal axis of the transducer.

free-field voltage response. *Electroacoustics.* Of an electroacoustic transducer used for sound reception, the ratio of the voltage appearing at the output terminals of the transducer when the output terminals are open-circuited to the free-field sound pressure existing at the transducer location prior to the introduction of the transducer in the sound field. The free-field voltage response is usually expressed in decibels, viz., 20 times the logarithm to the base of 10 to the quotient of the observed ratio divided by the reference ratio, usually 1 volt per microbar. The free-field sound wave whose direction of propagation has a specified orientation with respect to the principal axis of the transducer.

free impedance. *Electroacoustics.* Of a transducer: The impedance at the input of the transducer when the impedance of its load is made zero.

The approximation is often made that the free electric impedance of an electroacoustic transducer designed for use in water is that measured with the transducer in air.

free motional impedance. *Electroacoustics.* Of a transducer: The complex remainder after the blocked impedance has been subtracted from the free impedance.

free-recoil. The movement in recoil of the recoiling parts of a gun, if unimpeded by resistances such as springs or pneumatic pressure. It is a theoretical term used in recoil mechanism design.

free-recoil mount. A proving ground gun mount designed to closely approximate 'free-recoil' conditions. Used for determining design information.

free rocket. A rocket having fixed fins but no control surface, that is, no provision for guidance.

free run. As applied to guns, the travel of a projectile from its original position in the gun chamber until it engages with the rifling in the gun bore.

free space. See: **standoff.**

free stream. The relative flow of air or other fluid undisturbed by the presence of a moving body; *specif.,* the relative flow of air ahead of a shock wave.

frequency band. See: **band, frequency.**

frequency, carrier. The frequency of the unmodulated radio wave emanated from a radar, radio, or other type transmitter.

frequency conversion transducer. See: **conversion transducer.**

frequency departure. *Receivers.* The amount of variation of a carrier frequency or center frequency from its assigned value.

The term 'frequency deviation' which has been used for this meaning is in conflict with this essential term as applied to phase and frequency modulation,

and is therefore deprecated for future use in the above sense.

frequency deviation. *Receivers.* In frequency modulation, the peak difference between the instantaneous frequency of the modulated wave and the carrier frequency.

frequency divider. *Transducers.* See: **harmonic conversion transducer.**

frequency, electronic. The number of recurrences of a periodic phenomenon in a unit of time. In specifying electrical frequency, the customary unit of time is the second, for example, 15 kc per second.

Frequency Designation Table

Designation of Frequency	Authorized Abbreviation	Frequency in kilocycles/second
Very low	VLF	Below 30
Low	LF	30 to 300
Medium	MF	300 to 3,000
High	HF	3,000 to 30,000
Very high	VHF	30,000 to 300,000
Ultrahigh	UHF	300,000 to 3,000,000
Superhigh	SHF	3,000,000 to 30,000,000
Extremely high	EHF	30,000,000 to 300,000,000

FREQUENCY METER. An item which generates a signal over one or more continuously variable ranges and which is intended to check or measure frequencies from other sources. May include crystal control for checking calibration at specific frequencies. Does not include OSCILLATOR (as modified). For devices which are designed as voltage sources, see: **GENERATOR, SIGNAL.** May include calibration output.*

frequency modulation. (FM) A method or system of radio transmission in which the frequency of the carrier wave is varied or modulated.

frequency, pulling. The tendency of any load to change the frequency of an oscillator.

frequency-response equalization. *Electroacoustics.* The effect of all frequency discriminative means employed in a transmission system to obtain a desired overall frequency response.

frequency, subcarrier. In telemetering, an intermediate frequency that is modulated by intelligence signals and, in turn, is used to modulate the radio carrier either alone or in conjunction with subcarriers on other channels.

frequency, video. A very wide range of frequencies, including and exceeding the audio band of frequencies.

friction horsepower. The difference between indicated horsepower and brake horsepower, i.e., the horsepower used by an engine in overcoming the friction of moving parts, drawing in fuel, expelling exhaust, driving oil and fuel pumps, and the like.

friction layer. 1. *Meteorology.* The lower layer of the troposphere, in which the friction of the air against the earth's surface affects the movement of the air.
2. The boundary layer in an airflow.

The friction layer (sense 1) is considered to be anywhere from 1,500 to 3,000 feet thick.

fuze, antihandling. See: fuze, antisturbance.

fuze, antiwithdrawal. A fuze incorporating an anti-withdrawal device (which see).

fuze, auxiliary detonating. (ADF) An additional fuze used to augment the output of a fuze explosive train or to increase the overall safety features of the ammunition. Cf: booster.

fuze, bare. An unprotected and unpackaged fuze separated from its intended piece of ammunition.

fuze, barometric. A fuze that functions as a result of change in the pressure exerted by the surrounding air. Usually the change in pressure occurs by reason of travel from a region of one ambient pressure to a region of different ambient pressure. Also called 'air pressure fuze.'

fuze, base. Any fuze installed in the base of a projectile. Cf: FUZE, BASE DETONATING.

FUZE, BASE DETONATING. (BDF) A fuze, located in the base of a projectile, designed to be activated as a result of impact. Excludes FUZE, BOMB; FUZE, MINE; FUZE, HAND GRENADE and FUZE, ROCKET.*

FUZE, BASE DETONATING, SELF-DESTROYING. A FUZE, BASE DETONATING containing a device which causes the projectile bursting charge to detonate if prior functioning has not been caused by impact. Excludes FUZE, BOMB; FUZE, MINE; FUZE, HAND GRENADE and FUZE, ROCKET.*

fuze body. That part of a fuze contributing the major portion of the total weight, and which houses the majority of the functioning parts, and to which smaller parts are attached.

FUZE, BOMB. A fuze for use with bombs to be dropped from aircraft.

FUZE, BOMB, INERT. A FUZE, BOMB without explosive components used for training purposes.*

fuze, bore riding. Name sometimes given to a fuze which incorporates as a safety device a bore riding pin. See also: pin, bore riding.

fuze, bore safe. A fuze that has a means for preventing the detonator from initiating an explosion of the bursting charge while the missile is within its launching tube. See also: bore safety; fuze safety.

FUZE, BULLET IMPACT. A fuze designed to set off a demolition charge by the impact of a bullet.*

fuze cavity. A socket or hole in a bomb, projectile, or the like for receiving a fuze, or a portion of the fuze.

fuze cavity liner. See: liner, fuze cavity.

fuze chronograph. Proving ground instrument for measuring accurately the time of flight of a time fuzed projectile from the gun or launcher to the point of air burst. The instrument uses a photoelectric impulse tube which is pointed towards the expected point of burst. The light from the burst is picked up by the photoelectric cell and serves to stop the operation of the recording instrument which has been started by the passage of the magnetized projectile through a coil mounted on the muzzle of the weapon. The instrument may be used with any of

several recording or time measuring systems discussed under **chronograph**, which see.

fuze, combination. A fuze combining two different types of fuze mechanisms, especially one combining impact and time mechanisms. See: FUZE, TIME AND SUPERQUICK.

fuze, command. A fuze that functions as a result of intelligence transmitted to it from a remote location by means not directly associated with its environment.

fuze, concrete piercing. Fuze especially designed for piercing concrete before detonating its projectile.

fuze, concussion. A bomb fuze designed to function in the air in response to the concussion produced by the explosion of a preceding bomb. Also called 'airburst fuze' or 'air pressure fuze.'

fuze, contact. A fuze wherein primary initiation results from actual contact with the target to include such phenomena as impact, crush, tilt, electrical contact. See also: fuze, impact.

fuzed. Of a bomb, projectile, etc.: Equipped with one or more fuzes, as required.

fuze, delay. Any impact fuze incorporating a means of delaying its action after contact with the target. Cf: fuze, time. Delay fuzes are classified according to the length of time of the delay. See: fuze, long delay; fuze, medium delay; fuze, short delay.

fuze, delay action. See: fuze, delay.

fuze, delayed. See: fuze, delay.

fuze, detonating. Fuze designed to initiate its main munition by a detonating action, as compared to the igniting action of a fuze, igniting (which see). This type of fuze is required for adequate initiation of a high explosive main charge.

fuze, dummy. An imitation of a fuze which has the same shape, weight, and center of gravity as the fuze but has no explosives or moving parts.

fuze, electric. A fuze which depends for its arming and functioning upon events of an electronic nature. Such a fuze does not necessarily have to be entirely electric but may contain mechanical components. Cf: fuze, mechanical.

fuze, electric time. A fuze in which the time from initiation of action to the functioning can be controlled by 'setting' and is determined by electronic events.

fuze, electromechanical. See: fuze, mechanical.

fuze, electronic. See: fuze, electric.

fuze error. The variation in fuze range from standard as determined for a particular lot of ammunition.

fuze explosive train. See: explosive train.

FUZE, FLARE. A fuze for use with a flare (which see), to initiate ignition of the charge.

FUZE, FLARE, INERT. A FUZE, FLARE without explosive components used for training purposes.*

fuze, flashback. See: fuze, spitback.

FUZE, GUIDED MISSILE. A fuze for use with a guided missile, to initiate functioning at the desired time.

FUZE, GUIDED MISSILE, INERT. A FUZE, GUIDED MISSILE which has no ability to initiate a train of fire and which contains in itself no explosive items.*

FUZE, HAND GRENADE. A pyrotechnic delay fuze initiated by the release of a lever which in turn releases a spring propelled striker to impinge on a primer. The function of the fuze is to initiate detonation and/or ignition of the main charge of a hand grenade.*

fuze, hydrostatic. Fuze employed with depth bombs or charges to cause underwater detonation at a predetermined depth. Initiation is caused by the ambient fluid pressure.

fuze, igniting. Fuze designed to initiate its main munition by an igniting action, as compared to the detonating action of a fuze, detonating (which see). This type of fuze is suitable only for munitions using a main charge of low explosive or other readily ignitable material.

fuze, impact. A fuze in which the action is initiated by the force of impact. Sometimes called a 'contact fuze' or 'percussion fuze.'

fuze, inert. A fuze containing no explosive, pyrotechnic or chemical agent.

fuze, inertia. See: fuze, nondelay.

fuze, influence. See: FUZE, PROXIMITY.

fuze, instantaneous. See: fuze, superquick.

FUZE KIT, BOMB. A group of FUZE, BOMB, INERT used for training purposes.*

fuze liner. See: liner, fuze cavity.

fuze, live. A fuze containing explosives or active chemicals.

fuze, long delay. A type of delay fuze, especially for bombs, in which the fuze action is delayed for a relatively long period of time, depending upon the type, from minutes to days. See also: fuze, delay.

fuze, mechanical. Any fuze which depends for its arming and functioning on events primarily of a mechanical nature. Fuzes may consist of a combination of mechanical and electronic features. Proximity fuzes may contain a mechanical delayed arming device; mechanical fuzes may be functioned by electrical energy from a piezoelectric element. The classification is dependent upon which features are predominant. Fuzes combining mechanical and electronic features are sometimes referred to as electromechanical fuzes.

FUZE, MECHANICAL TIME. (MTF) A fuze which is actuated by a clocklike mechanism preset to the desired time. Excludes FUZE, BOMB; FUZE, MINE and FUZE, HAND GRENADE.*

FUZE, MECHANICAL TIME AND SUPERQUICK. A FUZE, MECHANICAL TIME containing an additional device designed to cause instantaneous activation as a result of impact. Excludes FUZE, BOMB; FUZE, MINE and FUZE, HAND GRENADE.*

FUZE, MECHANICAL TIME AND SUPERQUICK,

INERT. A FUZE, MECHANICAL TIME AND SUPERQUICK, without explosive elements.

FUZE, MECHANICAL TIME, DUMMY. An imitation of a mechanical time fuze having the same shape, weight and center of gravity as the fuze, but without explosive components.

FUZE, MECHANICAL TIME, INERT. A FUZE, MECHANICAL TIME without explosive components. Excludes FUZE, BOMB, INERT.*

fuze, medium delay. A type of delay fuze, especially for bombs, in which the fuze action is delayed for a period of time between that of short delay and long delay fuzes, normally four to fifteen seconds. See also: fuze, delay.

FUZE, MINE. A fuze designed to initiate a train of fire in a land mine.* (For underwater mine initiating device see: FIRING MECHANISM, UNDERWATER MINE.)

fuze, nondelay. Fuze that functions as a result of inertia of firing pin (or primer) as missile is retarded during penetration of target. The inertia causes the firing pin to strike the primer (or primer the firing pin), initiating fuze action. This type of fuze is inherently slower in action than the superquick or instantaneous fuze, since its action depends upon deceleration (retardation) of the missile during impact with the target. Also called 'inertia fuze.'

fuze, nose. A fuze for use in the forward end (nose) of a bomb or other missile. Term not generally applied to fuzes for use in artillery projectiles, where the term 'point fuze' is more commonly used. See also: fuze, point.

fuze, percussion. See: fuze, impact.

fuze, point. A fuze for use in the forward end of a projectile or rocket warhead.

FUZE, POINT DETONATING. A fuze which is located in the nose of a projectile and is designed to be actuated as a result of impact. Excludes FUZE, POINT DETONATING, SELF-DESTROYING; FUZE, BOMB; FUZE, MINE and FUZE, HAND GRENADE.*

FUZE, POINT DETONATING, DUMMY. An imitation of a point detonating fuze, having the same shape, weight and center of gravity as the fuze, but without explosive components.

FUZE, POINT DETONATING, INERT. A FUZE, POINT DETONATING without explosive components. Excludes FUZE, BOMB, INERT.*

FUZE, POINT DETONATING, SELF-DESTROYING. A FUZE, POINT DETONATING containing a device which causes the bursting charge to detonate if prior functioning has not been caused by impact. Excludes FUZE, BOMB; FUZE, MINE and FUZE, HAND GRENADE.* See also: fuze, self-destroying.

FUZE, POINT DETONATING, TRAINING. An item simulating a FUZE, POINT DETONATING used for training purposes. It is provided with manual safety and/or setting devices simulating those of a standard or proposed standard FUZE, POINT DETONATING. It may or may not be a

ballistic match with the fuze it represents and/or contains an explosive charge for realism or spotting purposes. Excludes FUZE, POINT DETONATING, DUMMY.*

fuze, point initiating. A fuze which has the target sensing element in the nose of the missile. (Usually refers to PIBD fuzes.) See also: FUZE, POINT INITIATING, BASE DETONATING.

FUZE, POINT INITIATING, BASE DETONATING. A fuze, with initiating components located in the nose of a projectile and detonating components located in the base of a projectile, designed to be activated as a result of impact.*

FUZE, PROXIMITY. A fuze wherein primary initiation occurs by sensing the presence, distance, and/or direction of the target through the characteristics of the target itself or its environment.* This name is preferred over synonymous terms.

FUZE, PROXIMITY, PRACTICE. A FUZE, PROXIMITY, restricted to practice use because of minor imperfections or other features tending toward malfunction and/or unreliability.*

fuze, radio. See: FUZE, PROXIMITY.

fuze, radio proximity. See: FUZE, PROXIMITY.

fuze range. 1. Range at which a projectile will burst when the fuze is set at a given time value. 2. The fuze setting necessary to produce a burst at a given point in space.

fuze range disk. A disk, part of several early model anti-aircraft gunsights, containing curves graduated in terms of fuze range, by means of which the amount of superelevation for a given set of conditions is automatically determined and applied to the sighting system of the gun.

FUZE, ROCKET. A fuze for use with a rocket. (In some cases rocket detonation is initiated by a FIRING MECHANISM, ROCKET.)

FUZE, ROCKET, INERT. A FUZE, ROCKET without explosive components.

fuze safe arming distance. The distance from the launcher within which a warhead burst could result in a high probability of death to personnel or serious damage to material on the launching platform.

fuze safety. Two terms have been commonly used to describe the safety built into a fuze to prevent premature functionings at the time of employment, and to provide the required safety in transportation. One term, bore safety, is a term which is strictly applicable only to fuzes used in artillery or mortar projectiles or rockets, and refers to the provision of means to prevent functioning while in the bore of the gun, or in the launching tube. Such fuzes are said to be 'bore safe.' Detonator safety is the second term, and may relate to fuzes for any application. It refers to the provision of means to prevent functioning of the succeeding element(s) of the explosive train if the detonator functions while the fuze parts are in the safe position. Such a fuze is said to be 'detonator safe.' In general the terms are interchangeable with respect to artillery, mortar and rocket fuzes, but bore safety applies only to those

types of fuzes. See also: bore safety; detonator safety; fuze, bore safe; interrupter; nonboresafe.

fuze, selective delay. A delay fuze which permits a selection from two or more functioning delay times.

fuze, self-destroying. Fuze designed to destroy itself (and the associated munition) after flight to a range greater than that to any probable target. Employed in anti-aircraft ammunition, to avoid impact in friendly territory.

FUZE SETTER. A device designed for manual and/or automatic setting of time fuzes. It may have scales and indicia for setting fuze time, range and corrector values independently.*

fuze setter-rammer. *AA Artillery.* The combination fuze setter and rammer is an automatic electrically motivated mechanism. It is utilized to feed single rounds of ammunition, set the fuzes, and ram the rounds into the chamber of the weapon. It automatically sets fuzes according to electrical fuze data transmitted from a remote director to the motor drive, which, in conjunction with an amplifier, converts the electrical data to mechanical data in the transmission assembly. When operating automatically, all that is required of the operators is the selection of the type of round, the loading, and the firing.

fuze, short delay. A type of delay fuze used both in bombs and artillery projectiles, in which the fuze action is delayed for a short period of time, less than 1 second.

FUZE, SMOKE POT. A fuze designed to initiate combustion in a smoke pot.

fuze, spitback. A fuze located in the nose of a shaped charge munition. When initiated by impact it produces a detonation which is directed toward the base element which detonates the main explosive charge. The combination of point impact fuze and base element is referred to as a point initiating base detonating (PIBD) fuzing system. See also: FUZE, POINT INITIATING, BASE DETONATING.

fuze, standard contour. Point fuze having a standard shape, size and weight agreed upon for use with a certain group of artillery projectiles. Such fuzes may be interchanged without affecting the flight of the projectile.

fuze, superquick. A fuze designed to function with the least possible delay after impact. The delay is of the order of microseconds.

fuze, supersensitive. Fuze that will set off a projectile dependably when it strikes a very light target, such as a fabric airplane wing.

fuze, tail. A fuze designed to be inserted in the after end of a bomb.

fuze, time. A fuze that can be preset to function after the lapse of a specified time.

FUZE, TIME AND SUPERQUICK. A fuze which is activated by the burning of a powder train preset to the desired time and which contains an additional device designed to cause instantaneous activation as a result of impact. Excludes FUZE, BOMB; FUZE, MINE and FUZE, HAND GRENADE.*

FUZE, TIME AND SUPERQUICK, INERT. A FUZE, TIME AND SUPERQUICK without explosive components. Excludes FUZE, BOMB, INERT.*

FUZE, TORPEDO. A fuze designed for use in the warhead of a torpedo, to initiate its functioning.

FUZE, TORPEDO, INERT. A FUZE, TORPEDO

without explosive components.*

fuze, variable time. See: **FUZE, PROXIMITY.**

fuze, VT. See: **FUZE, PROXIMITY.**

fuze well. See: **fuze cavity.**

fxd (abbr). 'Fixed.'

FY (abbr). 'Fiscal year.'

G

- g* (*abbr.*). 'Acceleration due to gravity.'
- G1** (*abbr.*). 'Assistant Chief of Staff, G-1, Personnel.'
- G2** (*abbr.*). 'Assistant Chief of Staff, G-2, Intelligence.'
- G3** (*abbr.*). 'Assistant Chief of Staff, G-3, Operations.'
- G4** (*abbr.*). 'Assistant Chief of Staff, G-4, Logistics.'
- GA** (*abbr.*). 'Ethyl phosphorodimethylamidocyanide' (tabun, war gas).

gage. 1. A measure, as 'wire gage' or 'sheet metal gage.'

2. An instrument for or means of measuring or testing, e.g., GAGE, CENTER; GAGE, THICKNESS; star gage. 3. *Firearms*. The interior diameter of the barrel of a shotgun expressed by the number of spherical lead bullets fitting it required to make a pound;—chiefly in combination, as, a twelve-gage shotgun. The measurements of shotguns of popular sizes are standardized on the above basis as follows:

<i>size of gun</i>	<i>diam. inches</i>	<i>size of gun</i>	<i>diam. inches</i>
8 gage	.835	14 gage	.693
10 gage	.775	16 gage	.662
12 gage	.729	20 gage	.615

Also used as part of the nomenclature of shotgun cartridges, for example, CARTRIDGE, 12 GAGE SHOTGUN. 4. *Mach.* A device for determining whether a specified dimension is within specified limits. A definite gage is one that establishes a particular dimension. A limit, or difference, gage consists of a series of two or more gages that represent the limits within which the work will be acceptable, as a go gage, which must go on or in, and a not-go gage, which must not go on or in, or must not screw on more than a specified number of turns. Limit gages, used in interchangeable manufacturing, are usually subdivided into (1) the inspection gage, embracing the entire tolerance permissible, and used by the manufacturer or purchaser when testing parts for acceptability, and (2) the working gage, used to test the work in the process of manufacture and having a tolerance less than the maximum. A check, or setting, gage is a definite gage used as a standard for testing a limit gage for wear or when setting an adjustable limit gage to size. A wear limit gage shows when a limit gage has worn the maximum permitted. An indicating gage indicates visually variations in contour or dimension, as a lever on a graduated scale. Gages are designated according to form and use as: plug, having an outside measuring surface made to test the size and contour of a hole; receiving, having an inside measuring surface made to test the size and contour of a male part; ring, for testing a cylindrical or conical part; snap, or caliper, having inside measuring surfaces arranged for calipering diameters, lengths, etc.;

angular, or taper, having measuring surfaces at an angle to each other; end-measuring, for making end measurements. A gage made with extreme accuracy and used only for reference in the manufacture or working on inspection gages is called a master, or reference, gage. A mechanical gage employs physical contact in order to secure measurement or comparison with a standard, but in an optical gage measurement is made through an optical system such as a microscope, projector, or interferometer. Master gages are often of the optical type. See: OPTICAL FLAT. 5. To measure or test, as with the use of a gage.

GAGE, ABSOLUTE PRESSURE, DIAL INDICATING. An instrument designed to measure vacuum, and indicate in terms of pressure above absolute zero, without the necessity of correction or adjustment for barometric or atmospheric pressure.*

gage, air blast. An instrument for determining the pressure characteristics of the shock wave produced by an explosive.

GAGE, ANGLE. One or more blades (leaves) of tempered steel ground to and marked with their respective angles. It is used for checking angles, as in forgings, castings and machine work.*

gage, angular. See: gage.

GAGE BLOCK. A hardened metallic block with parallel precision ground superfinished surfaces to permit wringing together. A component of GAGE BLOCK SET used in setup and inspection work. Excludes GAGE BLOCK SET.*

GAGE BLOCK SET. A group of hardened metallic blocks with parallel surfaces, superfinished flat to permit wringing together. They are made in sizes which can be assembled to form dimensions of 0.0001 inch, in variations from 0.200 inch up, according to requirements. Tolerances are held so that accumulated error is very small. Used in setup and inspection of precision work.*

gage, breechbore. A device used to determine the wear of the lands in the breech end of the barrel of a gun.

gage, caliper. See: gage.

GAGE, CENTER. A measuring tool used to test the angle of lathe centers, or as a standard for grinding and setting screw thread cutting tools. It consists of a short-tempered steel rule, one end of which is ground to a male angle and the other end to a female angle.*

gage, check. See: gage.

gage complete penetration. *Ballistics.* Penetration in which a hole of sufficient size is made through the plate so as to fully admit a plug gage of a designated percentage of diameter. If the projectile remains in

the plate and prevents the complete insertion of the plug gauge through the hole, the round is disregarded.

gauge, copper crusher. Device used to measure pressure developed in gun chamber by measuring the deformation of a copper cylinder.

GAGE, CYLINDER. A precision instrument consisting of a dial indicator mounted on a block which moves at right angles to the support frame known as the sled. The sled has two-line contact points which are at all times in alignment with the walls of the cylinder. The gauge is equipped with a movable dial, and a handle is provided for insertion of the gauge into a bore or cylinder. It is used to check and inspect the diameters of cylinders for taper, out of roundness, and accurately transfer the diameters of the cylinder bores.*

gauge, definite. See: **gauge.**

GAGE, DEPTH, DIAL INDICATING. A precision instrument designed for accurately measuring the depth of grooves, holes, or irregular parts. It consists of a dial indicator permanently attached to a horizontal base.*

GAGE, DEPTH, MICROMETER. A precision instrument designed for accurately measuring the depth of grooves, holes, or irregular parts. It consists of a micrometer attached vertically to a base and one or more measuring rods.*

GAGE, DEPTH, RULE. An instrument consisting of a hardened steel base (head) and a rule (or rod) which slides through the base. It is used to measure or determine the depth of holes, slots, and grooves, and if the base is graduated in degrees and the rule is adjustable, to duplicate angles and chamfers.*

GAGE, DEPTH, VERNIER. A precision measuring instrument used to determine accurate measurements of recesses and depth of holes. It consists of a GAGE, DEPTH, RULE with a small auxiliary scale attached to the base and through which the graduated rule slides.*

gauge, difference. See: **gauge.**

gauge, end-measuring. See: **gauge.**

gauge, feeler. See: **GAGE, THICKNESS.**

GAGE, FILLET AND RADIUS. A measuring tool having one or more blades (leaves) of tempered steel, ground to and marked with their respective radii. It is used for checking and/or measuring convex and concave radii.*

GAGE, FLUSH PIN, PLAIN CYLINDRICAL. A gauge used for the dimensional control of the specified depth of a hole, groove or slot, or height of a boss or protrusion. It consists of a movable cylindrical gaging pin, suitably retained within a body.*

gauge, fuel. An instrument for measuring and indicating the amount of fuel in a tank or similar container.

GAGE, GAS FLOW. A gauge designed to indicate the rate of flow in cubic feet per minute of gases passing through the gauge.*

gauge, go. See: **gauge.**

gauge, headspace. A gauge frequently shaped to fit the chamber of a gun for measuring the headspace or

distance from the face of the breechblock to the seating point of the cartridge.

GAGE, HEIGHT, VERNIER. A precision measuring instrument used to determine accurate measurements of height, for scribing, marking off, or transferring vertical distances from a plane surface. It consists of a narrow metal base upon which a main graduated scale is vertically mounted. An auxiliary scale with an attached measuring arm slides along the main scale to determine accurate fractional parts of divisions of the main scale.*

gauge, icosahedron. A gauge used in terminal ballistics measurements. In order to obtain the *average* presented area of a fragment resulting from the detonation of a munition item, the presented area is measured in each of the 16 positions and averaged arithmetically. The instrument used to obtain the presented areas is called an icosahedron gauge, since the fragment is positioned as though it were an icosahedron, a solid figure with 20 faces. The 16 positions consist of 10 corresponding to orientations of the faces, and six corresponding to orientations of the vertices.

gauge, indicating. See: **gauge.**

GAGE, INDICATING, INTERNAL. A precision measuring instrument used for rapid and accurate measurement of internal diameters. Consists of a body with integral cast dial indicator with actuating anvil contact points. Excludes GAGE, CONNECTING ROD and GAGE, CYLINDER.*

gauge, inspection. See: **gauge.**

gauge, limit. See: **gauge.**

gauge, master. See: **gauge.**

gauge, mechanical. See: **gauge.**

gauge, not-go. See: **gauge.**

G-agent. Any one of a group of war gases known as nerve gases. The group is known as the 'G-series.' See also: **CHEMICAL AGENT, ISOPROPYL METHYLPHOSPHONOFUORIDATE; nerve gas; soman; tabun.**

gauge, oil pressure. See: **GAGE, PRESSURE, DIAL INDICATING.**

gauge, optical. See: **gauge.**

gauge partial penetration. *Ballistics.* Penetration which approaches but does not fulfill the requirements for **gauge complete penetration** (which see).

gauge, piezoelectric. A pressure measuring device, employing a material which develops an electric potential when subjected to pressure. Materials which have piezoelectric properties are tourmaline, barium titanate, quartz, Rochelle salt, ammonium dihydrogen phosphate. Piezoelectric gauges are used in Ordnance for measuring blast pressures resulting from explosions and for measuring the pressures developed by propellants in gun tubes. By using an oscillograph, time-pressure records can be obtained.

GAGE, PLOTTING BOARD DATA. An item of flat and transparent design containing several etched circles, the diameters of which represent allowable tolerances of the gauge when placed over specific data (test dots) on a plotting board.*

gage, plug. See: gage.

GAGE, PLUG, MICROMETER. A precision measuring device used to measure internal diameters. It consists of four (4) expanding blades actuated by a micrometer head through a tapered plunger.*

GAGE, PLUG, PLAIN CYLINDRICAL. A gage used for the dimensional control of the diameter of a specified hole. It consists of a gaging member or members and handle.*

GAGE, PLUG, TAPER CYLINDRICAL. A gage used for the dimensional control of the taper of a specified hole. It consists of a gaging member or members and handle.*

GAGE, PLUG, THREAD. A gage used for the dimensional control of a specified internal thread. It consists of a gaging member or members and handle.*

GAGE, PRESSURE, DIAL INDICATING. An instrument designed to measure air, gas, fluid and vapor pressure by means of a pressure sensitive element which transmits energy, by direct linkage, to the indicating pointer of a scale calibrated in units of pressure.*

GAGE, PRESSURE, RECORDING. An instrument designed to measure and record fluid pressure, equal to or greater than atmospheric, by means of a pressure sensitive element directly linked to a pen staff which makes a permanent recording on a chart. May or may not have an indicating scale.*

gage, radius. See: GAGE, FILLET AND RADIUS.

gage, receiving. See: gage.

gage, reference. See: gage.

gage, ring. See: gage.

GAGE, RING, PLAIN. A gage used for the dimensional control of a specified external diameter, such as a shaft.*

GAGE, RING, TAPER. A gage used for the dimensional control of the taper of a specified external cylindrical component.*

GAGE, RING, THREAD. A gage used for the dimensional control of a specified external thread.*

GAGE, SCREW AND WIRE. A tool used to quickly determine the diameter size of machine screws and wires. It consists of a rectangular steel plate V-slotted and graduated in fractional diameters and wire gage numbers.*

GAGE, SCREW PITCH. One or more blades (leaves) of tempered steel, ground to and marked with their respective pitch, expressed as number of threads per inch in the English system and as millimeters or fractional parts thereof in the metric system. It is used for checking the pitch of external or internal screw threads.*

gage, setting. See: gage.

GAGE, SHEET AND PLATE. A tool used to quickly determine the thickness of sheet steel, sheet iron and steel plate. It consists of a rectangular plate or disk plate with slots cut around the periphery and marked according to a standard scale.*

GAGE, SMALL HOLE. A measuring instrument used

to transfer inside measurements of holes or slots to micrometer calipers for direct reading. It consists of a handle attached to a spring expanding ball and is usually designed with means of locking the ball at any position within the range of the gage. Excludes GAGE, TELESCOPING.*

gage, snap. See: gage.

GAGE, SNAP, PLAIN ADJUSTABLE. A gage used for the control of specified external dimensions. It consists of a frame and gaging members such as buttons, pins, blades and anvil. The gaging members may be set and locked to specified maximum and minimum limits within the given size range of the gage.*

GAGE, SNAP, THREAD ROLL. A gage used for the dimensional control of a specified external thread. It consists of a C-type frame and gaging members (rolls). The gaging members may be set and locked to specified maximum and/or minimum limits within the given size range of the gage.*

gage, star. See: star gage.

gage, strain. A strain-sensitive element, which permits recording, via a bridge circuit, of displacements between selected places.

GAGE, SURFACE. An instrument used for laying out work by the scribing of lines at a given height from some face of the work, of transferring the height from one piece to another. Consists of a rectangular base to which a spindle is mounted and pivoted in an upright position. A scriber is clamped to spindle in such a manner so as to be adjustable.*

GAGE, TAPER. One or more blades (leaves) of tempered steel ground to and marked with their respective taper. It is used for measuring the inside diameters of tubing, nuts drilled for tapping, and the width of slots.*

GAGE, TELESCOPING. A measuring instrument used to transfer inside measurements of holes or slots to micrometer calipers for direct reading. It consists of a rod with spring expanding plunger to which is attached a handle designed to lock plunger at any point within the range of the gage. Excludes GAGE, SMALL HOLE.*

GAGE, THICKNESS. One or more tempered steel blades (leaves) ground to and marked with their respective thickness and mounted in a holder or encased within a frame or case into which the leaves fold. It is used for checking narrow slots or gaging the clearance between fitted parts. Excludes BLADE, THICKNESS GAGE.*

GAGE, THICKNESS, DIAL INDICATING. A precision measuring instrument for making accurate thickness measurements of paper, leather, sheet metal, and other thin materials, consisting of a dial indicator mounted on a metal frame. A piece to be measured is inserted in the throat of the gage, the throat opening is closed upon the piece, and the thickness is indicated upon the dial.*

gage, thread. A gage for measuring screw threads or for checking or determining the pitch, thread angle,

- diameter, and other parts of the thread. See also: **GAGE, PLUG, THREAD; GAGE, RING, THREAD.**
- gauge unit.** An instrument incorporating two or more gauges into a single unit. It may include indicator(s) and/or thermometers.*
- gauge, wear.** Gauge, consisting of a truncated cone, inserted into the breech of a gun for measuring the bore enlargement at the origin of rifling.
- gauge, wear limit.** See: **gauge.**
- GAGE, WIRE.** A tool used to quickly determine the size number of wire, drill rod and/or for gaging the thickness of plates and sheets according to a wire number standard. Because of different standards for wire (e.g., nonferrous, stubs, American, Imperial, metric, etc.), diameters of identical sizes differ in number size according to standards used. It may be a rectangular plate or disk with slotted gaging sections around the periphery for measuring thickness of sheets and plates.*
- gauge, working.** See: **gauge.**
- gain.** 1. *Radio.* In an amplifying system, the increase of output power, voltage, or current over the input power, voltage, or current, expressed in terms of a ratio. 2. *Radar.* The difference, expressed as a ratio, between the power radiated by a directional antenna and the power radiated by an isotropic antenna when both have an equal power output.
- gain control, automatic.** (AGC) A circuit, also called the automatic volume control, which automatically varies the overall amplification, inversely proportional to input signal strength changes, such that the output volume of the receiver remains constant.
- gaine.** A booster or auxiliary detonating fuze. *British.*
- gain time control.** See: **differential gain control.**
- gain-twist; gaining twist.** Increasing twist. See: **rifling.**
- gallery practice ammunition.** Small arms ammunition with a reduced charge, used in gallery practice and also for guard purposes.
- GALVANOMETER.** An instrument which shows the presence of an electric current and/or indicates the relative intensity thereof, but which is not calibrated in actual values.*
- galvanometer recorder.** *Electroacoustics.* A combination of mirror and coil suspended in a magnetic field. The application of a signal voltage to the coil causes a reflected light beam from the mirror to pass across a slit in front of a moving photographic film, thus providing a photographic record of the signal.
- gamma radiation.** The combined process of emission, transmission, and absorption of gamma rays, as from the explosion of an atomic bomb.
- gamma ray.** A ray related to light rays and X-rays, but of shorter wave length, emitted by certain radioactive substances.
The wave length is from 10^{-9} to 10^{-12} cm.
- GANTRY.** An attachment of sufficiently substantial structure designed for mounting behind the heel of the boom for shortening cable length, thereby increasing the workload capacity and decreasing the hazard of cable-breakage when booms of exceptional length are used. It may or may not be lowered during transit from place to place.*
- gantry crane.** See: **CRANE, BRIDGE TRAVELING; CRANE, GANTRY REVOLVING.***
- GAR (abbr).** 'Guided aircraft rocket.'
- Garand rifle.** Popular name for the United States rifle, caliber .30 M1. (After its designer, John C. Garand, formerly of Springfield Armory.)
- gas (abbr).** 'Gasoline.'
- gas.** 1. Short for **war gas.** 2. Short for **gasoline.** 3. To expose to, or be affected by, a war gas. 4. To fill the tanks with gasoline. Often with *up*, as in 'we gassed up.'
- gas bomb.** See: **BOMB, GAS.**
- gas check.** Device in a gun that prevents escape of gas through the breech. See: **obturator.**
- gas-check pad.** Part of an obturator (which see).
- gas-check seat.** Conical surface in the breech bore of a gun, carefully machined to provide a close fit with the split rings of the obturator (which see).
- gas cloud.** Mixture of air and war gas vapor.
- gas cylinder.** Tube fixed to the barrel of a gas-operated automatic weapon and containing a piston, the movement of which operates the extracting and reloading mechanisms.
- gas ejector system.** See: **scavenger system (sense 1).**
- gas grenade.** See: **grenade, gas.**
- gas mixture.** The mixture of gasoline and air supplied to a cylinder of a spark ignition engine.
- gas munition.** Munition such as bomb, projectile, pot, candle, or spray tank containing a war gas (which see) and means of release.
- gasoline.** (gas) A hydrocarbon fuel used esp. in internal combustion reciprocating engines. Called 'petrol' by the British.
- GASOLINE, AUTOMOTIVE.** A reciprocating engine gasoline whose combustion characteristics are indicated by motor and research ratings as determined by the American Society for Testing Materials F-2 and F-1 methods, and whose vapor pressure maximum limit is variable, but in excess of 7.0 pounds per square inch (Reid).*
- GASOLINE, AVIATION.** A reciprocating engine gasoline whose combustion characteristics are indicated by lean and/or rich mixture ratings as determined by the American Society for Testing Materials F-3 and F-4 methods, and whose vapor pressure maximum limit is 7.0 pounds per square inch (Reid).*
- gasoline can.** See: **CAN, UTILITY; SAFETY CAN.***
- gasoline gels.** See: **gelatinized gasoline.**
- GASOLINE, UNLEADED.** A gasoline containing no more than trace amounts of tetraethyl lead, not in excess of 0.05 milliliters per gallon.*
- gasoline, white.** See: **GASOLINE, UNLEADED.***
- gas-operated gun.** Automatic gun operated solely by gas, utilizing a portion of the gas pressure to act on

rotating bands for artillery projectiles; this metal can be readily engraved by the lands as the projectile moves down the bore. Gilding metal is composed of approximately 90 percent copper and 10 percent zinc.

gimbal. Usually *pl.* in *sing.* sense. A contrivance containing two mutually perpendicular and intersecting axes of rotation.

A body mounted on gimbals is free to incline in any direction.

GIN, POLE. A device, such as a bracket or boom, designed to be temporarily attached to a pole as a support for block and tackle. It is used to raise and lower transformers and the like. It may include block and tackle.*

gisement. See: *declination.*

glass armor. Any of several special purpose armors composed of glass or containing glass.

GLASS, LAMINATED, FLAT. A glass affording clear vision formed by bonding two or more pieces of polished plate or sheet glass with a transparent plastic. When fractured, the particles of glass tend to adhere to the plastic instead of separating into flying fragments, thus providing a considerable measure of safety against bodily injury from pieces of broken glass when a fracture occurs. Excludes bent (curved) and/or special shaped items.*

glide. 1. The descent or drop of an aircraft or winged missile at a normal or nearly normal angle of attack, with little or no thrust. 2. In a less exact sense, a shallow dive. 3. To descend in a glide.

glide bomb. See: *bomb, glide.*

glide bombing. 1. The action of bombing a target from a gliding airplane. 2. The action of using glide bombs for bombing a target. Not frequently used in this sense. Cf: *toss bombing.*

glide path. Inclined surface of radio signal extending upward at an angle to the horizontal from the point of desired landing. Also called 'glide slope.'

glide slope. See: *glide path.*

gliding angle. A glide angle, esp. one at which an aircraft will steadily glide in still air without thrust.

glint. 1. The pulse-to-pulse variation in amplitude of reflected radar signals, owing to the reflection of the radar beam from a body which is changing its reflecting surface in an extremely rapid manner, such as would exist in pulses reflected from a rapidly spinning airplane propeller. 2. A gleam or flash of light reflected from the metal surface of an aircraft.

The glint is often used by experienced pilots to sight aircraft at high altitudes.

g load. A term expressing the numerical ratio of centrifugal force to gravitational force, or of acceleration or deceleration force to gravitational force.

Glomb. [*Glide bomb.*] A glider (LNT-2) adapted by the Navy for use as a glide bomb, loaded with destructive charges, and towed to the target area, where upon release, it is guided to its target by radio from a mother airplane.

GLOW PLUG. An item with a resistance type heating element for igniting fuel-air mixtures in EN-

GINE, DIESEL. Used for starting engines only. Excludes SPARK PLUG.*

glycol. A thick alcohol, $C_2H_4(OH)_2$, used as a coolant and antifreeze in liquid-cooled engines.

GM (abbr). 'Guided missile.'

GM angle. Angular difference between grid north and magnetic north measured east or west from grid north.

gnd (abbr). 'Ground.'

gnr (abbr). 'Gunnery.'

GOCO (abbr). 'Government-owned contractor-operated.' (Frequently pronounced as a word.)

go-getter. A control mechanism for automatic guidance of a rocket to its target.

GOGO (abbr). 'Government-owned Government-operated.' (Frequently pronounced as a word.)

goniometer. Instrument, used in surveying, for measuring angles.

GONIOMETER, ELECTRICAL. An item used to calculate and resolve, electrically and continuously, mathematical problems or electrical functions and to establish directional phase difference between two transmitted or received signals. Two windings are crossed and fixed at a ninety degree angle; the third winding is rotatable to the other windings.*

goop. A compound in paste form containing finely divided magnesium used as a constituent of certain incendiary bomb fillings.

goop bomb. A special kind of incendiary bomb. *Slang.* See: *goop.*

Goose. Air Force air-to-air missile with turbojet engines.

Gopher Ordnance Works. Ordnance Corps field installation, located at Rosemont, Minnesota.

government. (govt) *Specif.* Often *capitalized.* The government of the United States.

Government Patents Board. Established by Executive Order 10096 on 23 January 1950 to administer a uniform policy for the Government with respect to inventions made by Government employees. The Board consists of a full-time Chairman appointed by the President, and of one *ad hoc* member appointed by each of the ten major federal departments or agencies.

Government specifications. Any description of the technical requirements for a material, an item, or service, including the procedure by which it can be determined that the requirements have been met, according to Government expectations. See also: *specification.*

governor. An automatic device or attachment for regulating the speed of an engine or motor under varying conditions of load and pressure, by controlling the flow of fluid, electric current, or varying the pressure, as water or gas.*

govt (abbr). 'Government.'

GP (abbr). 1. 'General purpose,' often used for 'general purpose bomb.' 2. 'Group.'

GP bomb. Short for BOMB, GENERAL PURPOSE.

GPI (abbr). 'Ground position indicator.'

GPO (*abbr.*). 'Government Printing Office.'

gpveh (*abbr.*). 'General purpose vehicle.'

gr (*abbr.*). 'Grain.'

gradient microphone. *Electroacoustics.* A microphone the output of which corresponds to a gradient of the sound pressure.

Gradient microphones may be of any order as, for example, zero, first, second, and so forth. A pressure microphone is a gradient microphone of zero order. A velocity microphone is a gradient microphone of order one.

grain. (*gr*) 1. A single piece of solid propellant regardless of size or shape used in a gun or rocket. For the latter a grain is often very large and shaped to fit the requirements of the rocket. It is termed GRAIN, PROPELLANT, ROCKET. 2. A measure of weight, 1/7000 lb.

grain, degressive type. See: *degressive granulation.*

grain, progressive type. See: *progressive granulation.*

GRAIN, PROPELLANT, ROCKET. A preformed item of explosive material designed to constitute a component of a rocket propulsion charge. When ignited the item burns and provides a large volume of gas for propulsion effects.*

grand lot. See: *lot, grand.*

grant. *Patent law.* 1. The conveyance by the Government to a successful applicant for patent of the right to exclude others from practicing the invention covered by the patent for a term of 17 years. 2. That part of the application for patent by a Government employee, wherein the inventor grants to the Government the right to use the invention without the payment of any royalty.

granulation. Size and shape of grains of material, particularly solid propellants.

granulation, degressive. See: *degressive granulation.*

granulation, dual. See: *dual granulation.*

granulation, progressive. See: *progressive granulation.*

graphical firing table. A special slide rule on which are printed certain ballistic functions. It is used primarily in the preparation for and conduct of artillery fire.

graphic intersection. Intersection where the position of the unknown point is determined by plotting the direction lines.

GRAPHITE, COLLOIDAL. A dispersion of graphite in a liquid which is other than refined petroleum oil, silicone fluid, or castor oil. For items having a refined petroleum oil, silicone fluid, or castor oil vehicle, see: LUBRICATING OIL, COLLOIDAL GRAPHITE. Excludes GREASE, GRAPHITE.*

grass. Random interference on a radarscope due primarily to circuit noises, such as thermal agitation.

gravimetric density. Weight of the propellant (in lb per in.³) divided by the volume occupied by the propellant (includes the air space in and around propellant grains).

gravity drop. *Ballistics.* Vertical drop due to gravity. See: *vertical drop.*

graze. 1. Pass close to the surface, as a shot that follows a path nearly parallel to the ground and low enough to strike a standing man. 2. Burst of a projectile at the instant of impact with the ground. In this meaning also called 'graze burst.' 3. The sensing, in time fire, for a burst on impact with the ground or other material object on a level with or below the target.

graze burst. Burst of a projectile at the instant of impact with the ground. Also called *graze.*

graze sensitivity. The ability of a fuze to be initiated by grazing, that is, when the missile strikes a surface at a glancing angle (80°-90° from the normal).

grazing fire. Small arms fire which is approximately parallel to the ground and does not rise above the height of a man, standing.

grazing point. In the determination of dead space, the point where a trajectory touches the mask.

grease. A friction reducing solid or semisolid consisting of liquid lubricant(s) and soap and/or thickening agent(s) with or without additives or fillers.*

GREASE, AIRCRAFT. A grease designed for the lubrication of aircraft components such as actuators, engine accessories, control bearings, landing gears, and wheel bearings. Does not include GREASE, AIRCRAFT AND INSTRUMENT and GREASE, INSTRUMENT.*

GREASE, AIRCRAFT AND INSTRUMENT. A wide temperature range, synthetic base grease designed for lubrication of antifriction bearings, lightly loaded gears, and on sliding and rolling surfaces of such equipment as instruments, cameras, electronic equipment and aircraft control systems. It is not specially prepared for salt spray resistance. Does not include GREASE, AIRCRAFT and GREASE, INSTRUMENT.*

GREASE, AIRCRAFT ORDNANCE. A wide temperature range grease formulated for use as a lubricant of aircraft guns, accessory equipment, ammunition, and the like. Excludes GREASE, AIRCRAFT and GREASE, AIRCRAFT AND INSTRUMENT.*

GREASE, AUTOMOTIVE. A grease suitable for the lubrication of automotive components as chassis, wheel bearings, or water pumps. Does not include GREASE, AUTOMOTIVE AND ARTILLERY.*

GREASE, AUTOMOTIVE AND ARTILLERY. A grease with corrosion inhibitors designed for the lubrication of tactical automotive and artillery components suitable over an ambient temperature range of -65° Fahrenheit to +125° Fahrenheit.*

GREASE, BALL AND ROLLER BEARING. A grease designed primarily for the lubrication of ball and roller bearings operating at constant or intermittent high temperatures. Does not include GREASE, AUTOMOTIVE AND ARTILLERY; GREASE, AIRCRAFT; GREASE, AIRCRAFT AND INSTRUMENT; GREASE, SILICONE INSULATED ELECTRIC MOTOR and GREASE, ORDNANCE BEARING AND AMMUNITION.*

GREASE, GENERAL PURPOSE. A grease designed for lubrication of industrial types of equipment by

means of cups, grease fittings, or pressure lubricating systems. If special characteristics are required, see specific item names.*

GREASE, INSTRUMENT. A wide temperature range, synthetic base grease designed for lubrication of fire control equipment and instruments including related components such as synchros, gyros, and in control and computing mechanisms. It is specially prepared for salt spray resistance. Does not include GREASE, AIRCRAFT AND INSTRUMENT and GREASE, AIRCRAFT.*

GREASE, ORDNANCE BEARING AND AMMUNITION. A grease designed for lubrication and preservation of Naval Ordnance plain, ball, and roller bearings, and for the preservation of threads on ammunition. It is specially prepared for salt spray resistance.*

GREASE, ORDNANCE, EXTREME PRESSURE. A grease designed for lubrication of highly loaded Naval Ordnance components as rollers, tracks, pinions and racks of gun turrets and for slush-on lubrication of open or semi-inclosed gears exposed to salt sprays.*

GREASE, RIFLE. A grease designed for lubrication and preservation of small arms such as the caliber .30 rifle and the caliber .30 carbine.*

grease seal. Type of seal used on floating pistons of some hydropneumatic recoil systems to prevent leakage past the piston of gas or oil. This type of seal is also used in cylinders of some hydropneumatic equilibrators.

GREASE, SILICONE INSULATED ELECTRIC MOTOR. A grease designed for the lubrication of silicone insulated electric motors with heat stabilized ball and roller bearings and other specialized high temperature applications.*

green. Indicates, in the nomenclature of a SIGNAL, SMOKE, GROUND, several smoke pellets which produce freely falling streamers of green smoke at the height of the trajectory.

green bag charge. See: charge, green bag.

green parachute. Indicates, in the nomenclature of a SIGNAL, SMOKE, GROUND, a single smoke pellet, parachute suspended, which produces a green smoke.

Green Quail. Popular name for an Air Force air-to-surface missile designed to confuse enemy radar.

green star, cluster. Indicates, in the nomenclature of a SIGNAL, ILLUMINATION, GROUND, a cluster of several freely falling green stars (lights).

green star, parachute. Indicates, in the nomenclature of a SIGNAL, ILLUMINATION, GROUND, a single green star (light), parachute supported.

green tracer. Indicates, in the nomenclature of a SIGNAL, ILLUMINATION, AIRCRAFT, a green tracer (light) preceding the ejection of displays of other types.

Greenwich sidereal time. Sidereal time measured with reference to the Greenwich meridian.

grenade. A small explosive or chemical missile, originally designed to be thrown by hand, but now also designed to be projected from special grenade launch-

ers, usually fitted to rifles or carbines. Grenades may be classified in a broad sense as GRENADE, HAND and GRENADE, RIFLE. Many varieties and variations of these have been used, including a number of improvised ones. Some of the principal types and designations used in recent years are identified in the entries which follow.

grenade, antipersonnel. General term for any GRENADE, HAND or GRENADE, RIFLE, designed primarily for casualty effect against personnel. Usually refers to a grenade, fragmentation (which see).

grenade, antitank. A GRENADE, RIFLE designed to be used against tanks or other armored vehicles.

grenade, chemical. General term for any GRENADE, HAND or GRENADE, RIFLE charged with a chemical agent (which see).

grenade, chemical, burning type. General term for any grenade, chemical (which see) which releases its agent by a burning action. Contrasted with a grenade, chemical, bursting type (which see).

grenade, chemical, bursting type. General term for any grenade, chemical (which see) which releases its agent by a bursting action. Contrasted with a grenade, chemical, burning type (which see).

grenade, concussion. See: grenade, offensive.

grenade, defensive. See: grenade, fragmentation.

grenade, dummy. See: grenade, training.

grenade, fragmentation. A GRENADE, HAND designed to give fragmentation which is effective against personnel. The thrower needs protective cover, hence the grenade is used primarily for defensive operations and is often called a 'defensive grenade.'

grenade, frangible. Improvised incendiary hand grenade consisting of a glass container filled with a flammable liquid, with an igniter attached. It breaks and ignites upon striking a resistant target, such as a tank. Sometimes called 'Molotov cocktail.'

grenade, gas. Popular name for a grenade, chemical (which see), designed to release a war gas. The types of gases released are limited, usually, to tear gas and other irritants.

GRENADE, HAND. A grenade designed to be thrown by hand. May be projected by a rifle or carbine when grenade is fitted with an adapting device such as an ADAPTER, GRENADE PROJECTION.

grenade, illuminating. GRENADE, HAND or GRENADE, RIFLE designed to be placed or projected and to provide illumination by a burning action. It may be used also as a trip flare or as an incendiary device.

grenade, improvised. Any nonstandard type grenade which is prepared by the user. Examples are frangible grenades and 'fragmentation' grenades composed of nails, cartridge cases or other 'fragments' taped to the sides of a TNT block, with suitable detonating device.

grenade, incendiary. GRENADE, HAND designed to be filled with incendiary materials or used primarily for incendiary purposes.

grenade launcher. See: LAUNCHER, GRENADE.

grenade, magnetic. Also called magnetic charge. Small explosive charge with attached magnets, designed to be thrown or placed against tanks. The magnets hold the explosive in place until detonated by a time fuze.

grenade net. Net of chicken wire, or the like placed over a trench, etc., as a protection against grenades.

grenade, offensive. GRENADE, HAND having a non-metallic container, designed to kill or injure by blast and concussion. Distinguished especially from a fragmentation or defensive grenade. The offensive grenade is so called because the thrower, being out of range of the grenade's effects, can continue to advance as he throws, and does not have to take cover.

grenade pit. Pit, usually at the bottom of an incline, to catch hand grenades and limit the effects of their explosion.

grenade, practice. GRENADE, HAND or GRENADE, RIFLE used for practice purposes. The grenade may contain a small charge of black powder to give an indicating puff of smoke on functioning.

grenade projection adapter. See: ADAPTER, GRENADE PROJECTION.

GRENADE, RIFLE. A grenade especially designed or adapted to be fired or launched from the muzzle of a rifle or carbine.

grenade, riot. Grenade of plastic or other nonfragmenting material, containing a charge of tear gas and a detonating fuze with short delay. The grenade functions and the gas is released by a bursting action.

grenade, smoke. GRENADE, HAND or GRENADE, RIFLE containing a smoke producing mixture. Used for screening or signaling. Sometimes charged with colored smoke, as red, green, yellow or violet.

grenade, sticky. A small explosive charge covered with an adhesive, intended to be thrown or placed by hand where the adhesive will hold the charge in place until detonated by a time fuze. Also called 'sticky charge.'

grenade, training. An inert GRENADE, HAND used in throwing training. Formerly called 'dummy grenade.'

grenade, white phosphorus. GRENADE, HAND or GRENADE, RIFLE containing a main charge of white phosphorus and a small explosive burster charge for scattering the main charge. Used for smoke and some incendiary effect.

grid. 1. a. The pattern of intersecting lines set up in accordance with a grid system, and superimposed upon charts, aerial photographs, or the like, to permit ready location of points on the ground. See: military grid. b. A grid line. 2. Any systematic network, as of power lines, telephone lines, etc. 3. A part in the rear section of a rocket motor, which supports the propellant grain but allows enough clearance for the propellant gases to escape to the nozzle. 4. *Electronics.* An electrode in a vacuum tube for controlling the flow of electrons.

grid azimuth. Azimuth measured from grid north.

grid bearing. A bearing in which the reference line is grid north.

grid coordinates. Numbers and letters of a coordinate system which designate a point on a gridded map, photograph or chart.

grid course. A course in which the direction of the reference line is grid north.

gridded map. Map on which is drawn a system of grid lines running north and south, and east and west. These lines are used in locating points.

grid heading. A heading by reference to grid north.

grid north. Upward (northward) direction of the arbitrary meridian or vertical grid lines (north-south grid lines) usually found on military maps.

grid system. A system employed in establishing grid lines on a map, chart, aerial photograph, or the like. See: military grid system.

grinder. A manual or power-driven tool, designed to impart a rotary motion to an abrasive wheel for cutting and smoothing surfaces. In operation, the tool is not fixed and is controlled by hand.

grinding machine. A machine that uses an abrasive wheel, belt, or disk for the purpose of removing excess stock and of reducing the material to the desired shape and size, while at the same time leaving the desired finish on the work. Excludes grinder.*

grip. *Firearms.* The part of the handle adapted to the hand.

grip safety. Safety mechanism that prevents a gun from being fired unless the stock is firmly grasped while the trigger is pulled. It is used mainly on automatic pistols.

grommet. Device made of rope, plastic, rubber or metal to protect the rotating band of projectiles.

groove. 1. One of the grooves in a rifled gun barrel. See: rifling. 2. A crimping groove. 3. A fringing groove.

ground-air. 1. Of missiles, signals, etc.: From ground to the air. 2. Of a military force: Made up of army, or marine, and air force units. 3. Of actions: Conducted by both ground and air units.

ground distance. 1. The distance between two points on the earth's surface measured on a great circle connecting the two points projected to mean sea level. 2. The shortest distance between two points on the ground, measured on the surface.

ground fire. Fire, such as antiaircraft fire, that emanates from the ground.

ground-guided missile. A missile guided by radio control from the ground.

ground influence mine. See: mine, ground influence.

grounding plate. Electrically grounded metal plate upon which a person stands for the purpose of draining off static electricity as it is generated.

ground noise. *Electroacoustics.* In recording and reproducing, the residual system noise in the absence of signal. It is usually caused by inhomogeneity in the recording and reproducing media, but may also include amplifier noise such as tube noise or noise

- generated in resistive elements in the input of the reproducer amplifier system.
- ground position indicator.** (GPI) A special computer continuously indicating the actual position of the aircraft with reference to some fixed point on the ground.
- Radar measurements, compass, airspeed indicator, and altimeter are used in making the computations.
- ground projector.** See: PROJECTOR, SIGNAL, GROUND.
- ground return.** Indication on a radar indicator screen caused by radio waves being reflected back by the surface of the ground. See: radar clutter.
- ground signal.** Pyrotechnic signal intended to be fired from a position at ground level.
- ground signal projector.** See: PROJECTOR, SIGNAL, GROUND.
- groundspeed.** Speed of an aircraft, missile or aerial target in reference to the ground. It is the airspeed plus or minus the effect of the wind. Cf: airspeed.
- ground strafing.** Attack upon ground troops by low-flying aircraft using bombs, machine guns, and cannon.
- ground surveillance radar.** A radar set operated at a fixed point for observation and control of the position of aircraft or other vehicles in the vicinity.
- ground wave.** A radio wave that travels along, or near, the ground. Distinguished from a sky wave.
- A ground wave is made up of two component waves: a space wave and a surface wave.
- ground zero.** (GZ) The point on the earth's surface at which, above which, or below which, an atomic detonation has actually occurred.
- group.** (gp) 1. In telemetering, designates a number of subcarrier oscillators. 2. See: bullet group.
- grouser.** One of a number of projections on a tractor or tank track or automobile wheel to increase traction.
- growth factor.** *Ballistic missiles.* The additional weight of fuel and structural material required by the addition of one pound of payload to the original payload.
- G-scope.** A modification of the F-scope, in which the bright spot of the signal shows 'wings' as the distance to the target diminishes.
- G-series.** See: G-agent.
- guard.** Curved piece of metal on a gun within which the trigger is located and which protects the trigger. In this meaning, usually called 'trigger guard.'
- guard ammunition.** Ammunition specifically designed for use by guards. It usually contains a reduced propelling charge.
- guerilla warfare.** Operations carried on by independent or semi-independent forces in the rear of the enemy. These operations usually are conducted by irregular forces acting either separately from, or in conjunction with, regular forces but may at times be conducted entirely with regular troops. The objective of these operations is to harass, delay, and disrupt the military operations of the enemy, possibly leading to civil war, and they normally are characterized by the extensive use of unorthodox tactics, passive resistance, espionage, sabotage, diversion, assassination, and propaganda.
- guidance.** (gdnce) *Missiles.* The entire process of intelligence and of maneuver intended for reaching a specified destination, with special connotation on the flight path and on the information for determining the proper course.
- guidance, beam rider.** See: beam-rider guidance.
- guidance, celestial navigation.** Navigation by means of observations of celestial bodies. A system wherein a missile, suitably instrumented and containing all necessary guidance equipment, may follow a predetermined course in space with reference primarily to the relative positions of the missile and certain preselected celestial bodies.
- guidance, command.** See: command guidance.
- GUIDANCE CONTROL GROUP, GUIDED MISSILE, TRAILER MOUNTED.** A group designed for and mounted in a trailer. It is a subdivision of a RADAR COURSE DIRECTING CENTRAL, and utilizes radar position signals received from the antenna group to determine missile azimuth and elevation angle, range, and velocity, and provides appropriate corrective guidance command signals.*
- guidance, homing.** See: homing guidance.
- guidance, homing, active.** A system of homing guidance wherein both the source for illuminating the target and the receiver are carried within the missile.
- guidance, homing, passive.** A system of homing guidance wherein the receiver in the missile utilizes natural radiations from the target.
- guidance, homing, semiactive.** A system of homing guidance wherein the receiver in the missile utilizes radiations from the target which has been illuminated from a source other than in the missile.
- guidance, inertial.** See: inertial guidance.
- guidance, midcourse.** The guidance applied to a missile between the termination of the launching phase and the start of the terminal phase of guidance.
- guidance, preset.** See: preset guidance.
- guidance, radio navigation.** A form of guidance in which the path of the missile is determined by a time measurement of radio signals.
- guidance, stellar.** See: navigation, celestial.
- guidance system.** Any system of whatever sort for the guidance of rockets, bombs, or other missiles.
- guidance, terminal.** The guidance applied to a missile between the termination of the midcourse guidance and impact with, or detonation in close proximity to the target.
- guidance, terrestrial reference.** A technique of missile control wherein the predetermined path set into the control system of a missile can be followed by a device in the missile which reacts to some property of the earth, such as magnetic or gravitational effects.
- guided.** Of missiles, aircraft, tanks, etc.: Controlled or controllable as to direction by preset mechanisms,

- radio commands, or built-in self-reacting devices.
Cf: **unguided.**
- guided aircraft missile.** A guided missile launched, or designed for launching, from an aircraft.
- guided aircraft rocket.** (GAR) A rocket-powered guided missile designed to be launched from an aircraft in flight.
- guided bomb.** See: **bomb, guided.**
- guided missile.** (GM) An unmanned self-propelled vehicle, with or without a warhead, designed to move in a trajectory or flight path all or partially above the earth's surface and whose trajectory or course, while in flight, is capable of being controlled remotely, or by homing systems, or by inertial and/or programmed guidance from within. Excludes drones, torpedoes, and rockets and other vehicles whose trajectory or course cannot be controlled while in flight.* Guided missiles may be air-to-air (AAM), air-to-surface (ASM), air-to-underwater (AUM), surface-to-air (SAM), surface-to-surface (SSM), surface-to-underwater (SUM), underwater-to-air (UAM), underwater-to-surface (USM), and underwater-to-underwater (UUM).
- guided missile air accumulator.** See: **ACCUMULATOR, AIR, GUIDED MISSILE.***
- guided missile air servicer.** See: **AIR SERVICER, GUIDED MISSILE, TRUCK MOUNTED.***
- GUIDED MISSILE, ANTITANK.** An antitank missile whose flight path is controlled by a combination of optical sighting and command signals from an automatic computer through multiple wire command links. It may also contain an infrared homing device for final range correction. It is designed to be launched from any type vehicle or ground emplacement. Excludes items whose trajectory cannot be altered in flight.*
- guided missile body aft section.** See: **BODY SECTION, AFT, GUIDED MISSILE.***
- guided missile body center section.** See: **BODY SECTION, CENTER, GUIDED MISSILE.***
- guided missile body fore section.** See: **BODY SECTION, FORE, GUIDED MISSILE.***
- guided missile computer group.** See: **COMPUTER GROUP, GUIDED MISSILE.***
- guided missile control.** The guidance or direction exercised over a guided missile during its flight to a target.
See: **atmospheric control; command guidance; inertial guidance; nonatmospheric control.**
- guided missile control group, trailer mounted.** See: **GUIDANCE CONTROL GROUP, GUIDED MISSILE, TRAILER MOUNTED.***
- guided missile director-computer group.** See: **DIRECTOR-COMPUTER GROUP, GUIDED MISSILE.***
- guided missile director station group.** See: **DIRECTOR STATION GROUP, GUIDED MISSILE.***
- guided missile director station trailer.** See: **TRAILER, GUIDED MISSILE DIRECTOR STATION.***
- guided missile director station, trailer mounted.** See: **DIRECTOR STATION, GUIDED MISSILE, TRAILER MOUNTED.***
- guided missile erector.** Device by means of which a missile can be placed in its launching position at the launching site. Usually, for ground launchings, it consists of a mobile vehicle, which brings the missile from its storage point to the launching site and provides the required handling means for elevating or otherwise placing it into position for firing.
- guided missile field maintenance shop.** See: **SHOP EQUIPMENT, GUIDED MISSILE, SEMITRAILER MOUNTED.***
- guided missile fin position indicator.** See: **INDICATOR, FIN POSITION.***
- guided missile fin protractor.** See: **PROTRACTOR, FIN POSITION.***
- guided missile fins shipping and storage box.** See: **BOX, GUIDED MISSILE FINS, SHIPPING AND STORAGE.***
- guided missile firing panel.** See: **PANEL, FIRING, GUIDED MISSILE.***
- guided missile firing truck.** See: **FIRING STATION, GUIDED MISSILE.***
- guided missile flare.** See: **FLARE, GUIDED MISSILE.***
- guided missile flight simulator.** See: **SIMULATOR, GUIDED MISSILE FLIGHT.***
- guided missile fueling apron.** See: **APRON, FUELING, GUIDED MISSILE.***
- guided missile fuel manifold.** See: **MANIFOLD, FUEL, GUIDED MISSILE.***
- guided missile hoisting beam.** See: **BEAM, HOISTING, GUIDED MISSILE.***
- guided missile launcher, helical rail.** See: **LAUNCHER, HELICAL RAIL, GUIDED MISSILE.***
- guided missile launching and handling rail.** See: **RAIL, LAUNCHING-HANDLING, GUIDED MISSILE.***
- guided missile launching control station trailer.** See: **TRAILER, GUIDED MISSILE LAUNCHING CONTROL STATION.***
- guided missile magnetic discriminator.** See: **DISCRIMINATOR, MAGNETIC, GUIDED MISSILE.***
- guided missile monorail launcher.** See: **LAUNCHER, MONORAIL, GUIDED MISSILE.***
- guided missile optical tracker.** See: **TRACKER, OPTICAL.***
- guided missile platform launcher.** See: **LAUNCHER, PLATFORM, GUIDED MISSILE.***
- guided missile portable hoisting unit.** See: **HOISTING UNIT, PORTABLE, GUIDED MISSILE.***
- guided missile propellant draining kit.** See: **PROPELLANT DRAINING KIT, GUIDED MISSILE.***
- guided missile propellant filling kit.** See: **PROPELLANT FILLING KIT, GUIDED MISSILE.***
- guided missile propellant servicing truck.** See: **TRUCK, PROPELLANT SERVICING, GUIDED MISSILE.***

guided missile propellant shutoff. See: **PROPELLANT SHUTOFF, GUIDED MISSILE.***

guided missile servicing platform. See: **SERVICING PLATFORM, GUIDED MISSILE, TRUCK MOUNTED.***

guided missile shipping and storage container. See: **CONTAINER, SHIPPING AND STORAGE, GUIDED MISSILE.***

guided missile solid propellant. See: **PROPELLANT, SOLID, GUIDED MISSILE.***

guided missile test set. See: **TEST SET, GUIDED MISSILE.***

guided missile test station. See: **TEST STATION, GUIDED MISSILE, TRUCK MOUNTED.***

guided missile tracking station. See: **TRACKING STATION GROUP, GUIDED MISSILE.***

guided missile tracking station, trailer mounted. See: **TRACKING STATION, GUIDED MISSILE, TRAILER MOUNTED.***

guided missile trailer. See: **TRAILER, GUIDED MISSILE.***

guided missile warhead shipping and storage container. See: **CONTAINER, SHIPPING AND STORAGE, GUIDED MISSILE WARHEAD.***

guided missile warhead trailer. See: **TRAILER, WARHEAD, GUIDED MISSILE.***

guided missile zero length launcher. See: **LAUNCHER, ZERO LENGTH, GUIDED MISSILE.***

guided rocket. A guided missile having rocket propulsion.

Gulf Ordnance Plant. Ordnance Corps field installation, located at Aberdeen, Mississippi.

gun. 1. *General.* A piece of ordnance consisting essentially of a tube or barrel, for throwing projectiles by force, usually the force of an explosive, but sometimes that of compressed gas, spring, etc. The general term embraces such weapons as are sometimes specifically designated as **gun**; **howitzer**; **mortar**; **cannon**; **firearm**; **rifle**; **shotgun**; **carbine**; **pistol**; **revolver**. (See separate entries.) 2. *Specif.* A **gun** (sense 1) with relatively long barrel, usually over 30 calibers, with relatively high initial velocity, and capable of being fired at low angles of elevation. 3. A discharge of a cannon in a salute, as a signal, or the like, as a salute of seventeen **guns**; the evening **gun**. 4. To fire upon with **guns**. 5. To advance the throttle or apply full power to an engine or motor.

gun, antiaircraft. A gun especially designed for use against aircraft, easily shifted in direction and elevation, having great range, and capable of firing at high angles of elevation.

GUN, ANTI-AIRCRAFT ARTILLERY, SELF-PROPELLED. A complete projectile-firing weapon mounted on a self-propelled vehicle. It is designed for use as a mobile antiaircraft weapon.*

GUN, ANTI-AIRCRAFT ARTILLERY, TOWED. A complete projectile-firing weapon designed to fire on and destroy enemy aircraft. It does not have facilities for self-propulsion.*

gun, antitank. A gun designed or suitable for use against tanks or other armored vehicles.

GUN, ANTITANK, SELF-PROPELLED. A complete projectile-firing weapon mounted on a self-propelled vehicle. It is designed for use against tanks or other armored vehicles.*

GUN, ANTITANK, TOWED. A complete projectile-firing weapon designed for use against tanks or other armored vehicles. It does not have facilities for self-propulsion.*

gun, automatic, 20 millimeter. See: **machine gun.**

gun, automatic, 30 millimeter. See: **machine gun.**

gun-bomb-rocket sight. A computing sight used in a fighter aircraft in which different data may be set for use in aiming gunfire, bombs, or rockets.

gun book. Log that records the history of the operations and inspections of a particular gun.

gunbore line. The extended bore axis of a gun.

gunbrech. The rear end of a cannon from the front slope back to the rear face, exclusive of the breech mechanism. In this metal are formed the seat for the breech mechanism, the powder chamber, and the slopes connecting the latter with the rifled portion of the bore.

gun camera. 1. A camera used in gunnery training that records the image of the target at which it is aimed on a strip of motion-picture film. 2. A camera synchronized to a gun to record the results of firing. The film in a gun camera reveals if the camera was correctly sighted on the target. Gun cameras used in flexible gunnery training may have the outward appearance of a machine gun.

gun carriage. Mobile or fixed support for a gun. It sometimes includes the elevating and traversing mechanisms. Sometimes called carriage.

gun charger. A mechanism on a gun that operates to retract the breech mechanism or bolt to the rear and to insert a charge into the chamber. Often shortened 'charger.'

On a machine gun, the charger retracts the breech mechanism to the rear of the receiver, lining up a round with the barrel and allowing the breech mechanism to move forward to chamber the round.

A gun charger may be operated manually or by other means. See: **automatic gun charger**; **charging cable**; **pneumatic gun charger.**

guncotton. Nitrocellulose of high nitration (13.35 to 13.4 percent nitrogen); nitrocotton. Explosive made by treating cotton with nitric and sulfuric acids. Guncotton is used principally in the manufacture of single base and double base propellants.

gun cover. Fabric cover, usually of canvas, to protect gun and sometimes carriage, from rain, dust and the like.

gun-directing radar. Radar used to direct antiaircraft artillery or similar fire.

gun displacement. 1. Distance from a gun to the directing point or the base piece of a battery. 2. Movement of a gun to a new firing position.

gun emplacement. Firing location of a gun together

with necessary installations, such as camouflage, ammunition supply, etc.

GUN, FIELD ARTILLERY, SELF-PROPELLED. A complete projectile-firing weapon mounted on a self-propelled vehicle. It is designed for use as a mobile artillery weapon.*

GUN, FIELD ARTILLERY, TOWED. A complete projectile-firing weapon mounted on a carriage and mobile enough to accompany infantry or armored units in the field. It is used for long-range fire or for the delivery of fire requiring a flat trajectory and high velocity. It does not have facilities for self-propulsion.*

gunfire. Use of artillery, rifles, and small arms as distinguished from the use of bayonets, swords, torpedoes, and bombs.

gun flash. Muzzle flash.

gun group. Major parts of a gun, considered as a unit distinct from its mount.

GUN, HEAVY, MOTORIZED. A mobile, long-range, artillery weapon of the double recoil type, capable of firing conventional type ammunition. It consists of a cannon, gun carriage, primary recoil mechanism, secondary recoil mechanism, projectile hand cart, a front, heavy gun-lifting truck, and rear, heavy gun-lifting truck.*

gun hoist. Device placed near the breech of a gun for lifting propellant and projectiles.

gun, 8 inch. See: **GUN, FIELD ARTILLERY, TOWED.***

gun jack. A jack for forcing a tube of a gun out of battery.

gun junction box. Container for the connections of the wires and cables from the data transmission system, the power systems, indicators, etc., on an individual gun.

gun launcher. A gun adapted to launching guided missiles or rockets.

gun laying. The action of aiming a gun.

gun-laying radar. Any radar equipment specifically designed for determining range, azimuth, and elevation of a target for purposes of fire direction.

gun lifting truck. See: **TRUCK, GUN LIFTING.**

gun, line throwing. See: **LINE THROWING DEVICE.***

gun, machine, caliber .30. See: **machine gun.**

gun, machine, caliber .50. See: **machine gun.**

gun mantlet. See: **mantlet.**

gun, 90 mm. See: **GUN, ANTI-AIRCRAFT ARTILLERY, TOWED.***

gun, 120 mm. See: **GUN, ANTI-AIRCRAFT, ARTILLERY, TOWED.***

gun, 155 mm. See: **GUN, FIELD ARTILLERY, TOWED.***

gun motor carriage. See: **carriage.**

gunner's quadrant. Instrument used for laying the gun for elevation. It measures the vertical angle which the axis of the bore makes with the horizontal. See: **quadrant.**

gunnery. (gnr) The art or practice of using machine guns or cannon either on the ground or in the air.

gun parallax. The difference in azimuth between the line from the directing point to the target and the line from the gun to the target. Cf: **parallax.**

gun pointing data. See: **firing data.**

gun powder. See: **black powder.**

gun pressures. See: **pressures, gun.**

gun pull, critical. The maximum pulling force in pounds developed by the gun feeder mechanism during satisfactory operation of automatic guns.

gun rack. See: **arms rack.**

gun rail. Track for machine gun carriage mounts that extends around the body of a scout car or a similar open, armored vehicle.

gun reaction (counterrecoil). Counterrecoil gun reaction is the force exerted on the gun mount or mounts by the impact of the moving parts returning to battery or beyond.

gun reaction (recoil). Recoil gun reaction is the force exerted on the gun mount or mounts by the rearward movement of the gun resulting from the forward motion of the projectile and hot gases.

gun, self-propelled. See: **mount, self-propelled.**

gun, self-propelled, full tracked. See: **GUN, ANTI-AIRCRAFT ARTILLERY, SELF-PROPELLED; GUN, ANTI-TANK, SELF-PROPELLED and GUN, FIELD ARTILLERY, SELF-PROPELLED.**

gun, self-propelled, half tracked. See: **GUN, ANTI-AIRCRAFT ARTILLERY, SELF-PROPELLED; GUN, ANTI-TANK, SELF-PROPELLED and GUN, FIELD ARTILLERY, SELF-PROPELLED.**

gun shield. See: **shield (sense 1).**

gunsight computer. That component of a computing gunsight that calculates for variables in gunnery and computes a prediction angle.

gun slide. 1. Portion of a gun which rests on the cradle guides. 2. Part of a plotting and relocating board mechanism.

gun sling. Strap attached to a rifle or carbine to be placed over a man's shoulder to sustain the weight of the firearm on the march and to hold it steady when being fired. Also called 'sling.'

gun stoppage. The accidental stopping of fire in a gun, caused by the faulty action of the gun or of the ammunition; stoppage.

gun, submachine. See: **submachine gun.**

gun, submachine, caliber .45. See: **machine gun.**

gun-target line. Imaginary straight line from a gun to a target.

gun, tire repair. See: **TIRE GUN, PUNCTURE REPAIR.***

gun tube. See: **tube.**

gun wave. See: **muzzle wave.**

Gurney constant. A factor for use in *Gurney formulas*, which is constant for each explosive, but which varies with different explosives. It is expressed in feet per second. See: **Gurney formulas.**

Gurney formulas. A series of formulas, each formula corresponding to a particular geometry of the container, which enables quite accurate prediction of the initial fragment velocity. The velocity is dependent on the geometry, the explosive used, and the ratio of the explosive charge and metal weights.

gutter. Portion of an inner liner of a jet engine which is grooved for better operation.

gymnastication. Process of artificially exercising a recoil mechanism by mechanical means. Prevents undue deterioration in storage. See also: **gymnasticator.**

gymnasticator. Machine for artificially exercising recoil mechanisms by mechanical means, i.e., **gymnastication**, which see. Permits exercise of recoil mechanisms without removing from storage. See also: **EXERCISER, RECOIL MECHANISM.**

gyro. 1. Short for 'gyroscope,' or 'gyroscopic.' Used in numerous combinations, as in *gyrocompass*, *gyro gunsight*, *gyro horizon*, and *gyro instrument*. 2. Also short for 'gyrocompass,' 'gyro horizon,' etc.

gyrocompass. A directional gyro or a Gyrosyn compass.

gyroscope. A device which utilizes the properties of a spinning mass to remain fixed in space. The spinning mass (rotor) is supported in a gimbal(s) such that the outer structure has rotational freedom about one or more axes perpendicular to each other and to the axis of spin. The direction of the spin axis in space can be altered by applying a force about an axis (torque) perpendicular to both the spin axis and the axis about which the change in direction (precession) is desired. The 'space' herein referred to is that reference frame within which Newtonian physics applies, sometimes referred to as 'inertial space.'*

gyroscope, directional. 1. A flight instrument employing a gyroscope which holds its position and indicates deviation from the desired heading. 2. A gyroscope in an autopilot or bombsight mechanism that provides directional stability.

GYROSCOPE, DISPLACEMENT. A gyroscope which senses, measures and transmits angular displacement data.*

gyroscope, free. A gyro mounted without any external means provided to control or affect its normal precession.

GYROSCOPE, INTEGRATING. A gyroscope which senses the rate of angular displacement and measures and transmits the time integral of this rate.*

GYROSCOPE, RATE. A gyroscope which senses, measures, and transmits rate of angular displacement data.*

gyroscopic horizon. A gyroscopic instrument that indicates the lateral and longitudinal attitude of the airplane by simulating the natural horizon.

gyro sight. A sight which employs a gyroscope.

gyrostabilizer. Mechanism which stabilizes the vertical motion of a tank gun, regardless of the pitching motion of the tank while moving.

Gyrosyn. In full, **Gyrosyn compass.** A trademark for a compass that consists of a directional gyro synchronized with the horizontal component of the earth's magnetic field by means of a flux gate.

The flux gate detects the direction of the lines of force and transmits the information electrically to a precession device. Repeaters are a part of the Gyrosyn or Gyrosyn system.

GZ (abbr). 'Ground zero.'

H

- H** (*abbr.*). Chemical agent, 'mustard gas' (war gas).
- Haber process.** The production of synthetic ammonia by the combination of pure gaseous nitrogen and hydrogen, effected under pressure and high temperature in the presence of a suitable catalyst. (Other processes employed for the synthesis of ammonia are modifications of the Haber process.)
- Haleite.** (EDNA) High explosive, ethylenedinitramine or EDNA. A white crystalline compound. It was named for its developer, Dr. G. C. Hale of Picatinny Arsenal. It has been found suitable for use as a bursting charge explosive and as an ingredient of the binary explosive ednatol (which see).
- half-adder.** *Electronic computers.* A circuit having two input and two output channels for binary signals (0, 1) and in which the output signals are related to the input signals.
- halfcock.** To set the hammer of a small arm weapon at the half cock.
- half cock.** Position of the hammer of a small arm weapon when it is held by the first cocking notch, with the trigger locked and the weapon relatively safe. Cf: halfcock.
- halflife.** The length of time required for a radioactive isotope to decay to half its initial radioactive value, i.e., to lose half of the radioactive particles present through disintegration, its atoms being converted into stable atoms.
- The halflife of different radioisotopes varies. For example, C¹¹ has a halflife of 21 minutes, C¹⁴ has a halflife of 5,400 years. A substance that has had three halflife periods has one-eighth of its radioactivity remaining.
- half-loaded.** In automatic arms, the belt or magazine inserted and receiver charged, but without the first cartridge actually in the chamber.
- half thickness.** Thickness of absorbing material necessary to reduce by one-half the intensity of radiation which passes through it.
- half-track vehicle.** Combination wheeled and track-laying vehicle in which the rear end is supported by a complete band track and the front end is supported on wheels; halftrack.
- half-weight.** In the analysis of fragmentation results from projectiles or other munitions, that weight of fragment which divides the total fragments into two groups of equal weight, one group including all fragments heavier than the half-weight fragment, and the second group including all those which are lighter.
- halving.** Division of the field of view, observed from a coincidence type range finder, into two equal portions, one the exact mirror image of the other.
- halving adjustment.** Adjustment of the coincidence type range finder so that the two sections of the field of view, divided by the halving line, are exact mirror images of each other.
- halving line.** The line which divides the two half images in a coincidence type range finder. The two halves of the images produced by the two objectives of the instrument must be brought to a point where they match or coincide above and below the halving line.
- HAM** (*abbr.*). 'Heavy automotive maintenance.'
- hammer.** Part of the firing mechanism of a gun that strikes the firing pin or percussion cap and fires the gun.
- hammer gun.** Gun with an outside, visible hammer.
- hammerless gun.** Gun with a wholly inclosed hammer and firing mechanism.
- hammer pin.** Pin that holds the hammer in its correct operating position in a gun, and upon which the hammer turns.
- hand arm.** See: hand weapon.
- hand grenade.** See: GRENADE, HAND.
- hand grenade simulator.** See: SIMULATOR, HAND GRENADE.
- handguard.** Wooden part of a shoulder gun which covers the barrel beyond the breech mechanism.
- hand held.** Indicates, in the nomenclature of SIGNAL, ILLUMINATION, GROUND and SIGNAL, SMOKE, GROUND, a rocket propelled, fin stabilized signal that has the launching mechanism integral with the signal.
- handle, breech operating.** Handle used for opening and closing the breech.
- hand-operating device.** Mechanism on certain automatic firing weapons that permits the piece to be prepared by hand for firing.
- hand rammed.** As part of cartridge nomenclature, indicates that the cartridge is intended to be rammed into the gun by hand rather than by power.
- handspike.** Handle attached to the trails of certain pieces for ease in handling.
- hand weapon.** A weapon, such as a pistol, knife, or sword, used by one hand; hand arm.
- Distinguished esp. from a shoulder weapon, in regard to firearms.
- HANDWHEEL.** An item having a major diameter of 3 or more inches (other than items having spoked or simulated spoked construction, which may be under 3 inches) designed to be gripped by the hand to transmit rotary motion to other devices through a center axis, fabricated in the form of a solid body

- with simulated spokes or a recessed surface between the rim and the hub, or it may be built up in the form of a frame having a central hub connected to the rim by the spokes. It may have reference markings in the form of dots, arrows, hairline, etc., to indicate the relative position and/or direction of rotation of the item(s) with which it is used. It may also include an integral ratchet device. For similar items having a maximum diameter of less than 3 inches, see: **KNOB**.*
- hang.** To lock the receiver or bolt of a gun in an open position.
- HANGER, UNDERWATER MINE.** A metallic item attached to an underwater mine case for the purpose of supporting an underwater mine anchor.*
- hangfire.** A brief undesired delay in the functioning of an ammunition item after initiating action is taken. Usually refers to delay in ignition of a propelling charge. Cf: **misfire**. See also: **fire** (sense 1).
- hangfire device.** In ammunition testing, a device for measuring the time between the initiation of the firing cycle and the transit of the bullet through the recording device.
- hangfire test.** Test to determine uniformity and promptness of fire of a type of ammunition.
- hangwire.** Length of wire connecting the fuze assembly of an aerial flare or bomb to the structure of an aircraft. The wire removes the safety and arms the fuze after the flare or bomb has fallen the wire's length from the aircraft; in some flares it opens a parachute or stabilizing sleeve.
- harassing agent.** A chemical agent (which see), such as irritating gas or smoke, that forces troops to wear masks and so cuts down their efficiency. It produces irritating effects only.
- harassing fire.** Fire of less intensity than neutralization, designed to inflict losses, or, by the threat of losses, to disturb the rest of the enemy troops, to curtail movement, and in general, to lower morale.
- harassing gas.** See: **harassing agent**.
- hard.** A part of a beach with a specially-prepared hardened surface extending into the water, used for loading and unloading directly into or out of landing vessels.
- hardness.** Property of being able to resist permanent deformation. It is resistant to plastic deformation and is measured by resistance to indentation and penetration, resistance to scratching and abrasion, and in many other ways. A definite relation exists between hardness and tensile strength.
- hardstand.** Any paved, compacted, or otherwise specially-prepared surface or area set up either for vehicles, or for storing supplies and equipment.
- harmonic.** A component having a frequency which is an integral multiple of the fundamental frequency. For example, a component, the frequency of which is three times the fundamental frequency, is called the third harmonic.
- harmonic conversion transducer.** A conversion transducer in which the useful output frequency is a multiple of the input frequency.
- Either a frequency multiplier or a frequency divider is a special case of a harmonic conversion transducer.
- harmonic distortion.** Nonlinear distortion characterized by the appearance in the output of harmonics other than the fundamental component when the input wave is sinusoidal.
- harmonic frequency.** *Physics.* A frequency which is an integral multiple of a fundamental frequency.
- harmonic series of sound.** *Electroacoustics.* One in which each basic frequency in the series is an integral multiple of a fundamental frequency.
- harmonization.** Adjustment of a gun in relation to its sights so that the curving path of its projectile meets the straight line of sight at the target.
- harmonize.** To align the sights of a gun so that the curving path of the projectile will meet the straight line of sight at the target; to adjust or align the gunsight, guns, rocket launchers, or gun camera of a fighter aircraft so that an accurate aim is obtained at a given range, or so that the guns will produce a desired pattern of fire. Hence, **harmonization**. Cf: **boresight**; and see: **pattern harmonization**; **point harmonization**.
- hasty mine field.** Field of mines quickly laid as a protection against an enemy attack. When practicable it is laid in a definite pattern, as is a deliberate field, but measurements are approximate rather than exact.
- Hawk.** Army surface-to-air missile for use against low flying planes. Conventional or nuclear warhead may be used. Employs solid fuel and radar homing.
- H-bomb.** See: **bomb, hydrogen**.
- HBX.** Several explosive compositions used primarily for blast effect, carrying distinguishing nomenclature, such as HBX-1, etc., differing in proportions and constituents, being essentially mixtures of TNT, RDX, and aluminum.
- HC (abbr).** Chemical agent, 'hexachloroethane' (smoke).
- HC mixture.** See: **CHEMICAL AGENT, HEXACHLOROETHANE MIXTURE**.
- HD (abbr).** Chemical agent, 'mustard, distilled' (war gas).
- HE (abbr).** 'High explosive.'
- HEAA (abbr).** 'High explosive antiaircraft.'
- head.** 1. See: **warhead**. 2. Flat circular part of the base of a cartridge case; the covering area surrounding the face of the primer pocket. 3. Small part that holds the cylinder on its axis on the revolver. 4. *Electronic computers.* A device which reads, records or erases information in a storage medium, usually a small electromagnet used to read, write or erase information on a magnetic drum or tape or the set of perforating or reading fingers and block assembly for punching or reading holes in paper tape.
- heading.** 1. In air navigation, the horizontal direction in which an aircraft is pointed, i.e., the direction of its longitudinal axis, usually expressed as an angle measured clockwise from some reference line, such as true north, to the longitudinal axis; *specif.*, true heading. 2. In a broader sense, direction.

headlight. Indicates, in nomenclature of tracer ammunition, that the tracer produces a light which is visible from the front, as from an airplane which is under fire.

HEAD, SOUND RECORDER. An item which changes electrical impulses into magnetic variations in order to record sonic variations data on wire or tape.*

HEAD, SOUND REPRODUCER. An item which changes magnetic variations into electrical impulses for the reproduction of sonic variations from wire or tape.*

headspace. The distance between the face of the locked bolt or breechblock of a gun and some specified point in the chamber.

With guns designed for rimless, bottlenecked cartridges, headspace is the space between the bolt face and a specified point on the shoulder of the chamber; with guns using rimmed cartridges, the space between the bolt face and the ridge or abutment in the chamber against which the rim rests; and with guns using rimless straight-case cartridges, the space between the bolt face and the ridge or point in the chamber where the mouth of the cartridge case rests.

headspace gage. See: *gage, headspace.*

headwind. In gunnery or target practice, a wind which blows from the target to the observer; a 12 o'clock wind.

HEAP (*abbr.*). 'High explosive armor-piercing'

HEAT, HE,AT. (Often pronounced as a word.) Originally an abbreviation for 'high explosive antitank.' A term used to designate high explosive ammunition containing a shaped charge. See also: *charge, shaped.*

heat balance. A tabulation showing the percentages of the heat developed by combustion in the engine cylinder that are: (a) delivered in the form of power at the crankshaft, (b) lost in friction, (c) lost to the cooling water, (d) lost in the exhaust gases, and (e) lost by direct radiation.

heat engine. Any engine or motor that converts heat energy into mechanical energy or motion, as an internal combustion piston engine, jet engine, steam engine, or rocket engine.

HEATER, AIR DUCT-COOLANT, ENGINE. A heater designed to burn fuel which applies heat by means of air ducts and a direct connection to the engine coolant system to facilitate starting in low temperatures; may also supply heat to engine surfaces, battery, and the like; must have mounting facilities and be equipped with a blower(s) (fan). See also: *HEATER, AIR DUCT, ENGINE* and *HEATER, COOLANT, ENGINE.**

HEATER, AIR DUCT, ENGINE. A heater designed to burn fuel which applies heat through ducts to engine surfaces, battery and the like to facilitate starting in low temperatures. It is not connected to the engine coolant system; must have mounting facilities and be equipped with a blower(s) (fan). See also: *HEATER, AIR DUCT-COOLANT, ENGINE* and *HEATER, COOLANT, ENGINE.**

HEATER, COOLANT, ENGINE. A heater designed

to burn fuel or utilize electric power which applies heat through direct connection to the engine coolant system to facilitate starting in low temperatures; may also supply heated coolant to heat exchangers. Must have mounting facilities. See also: *HEATER, AIR DUCT, ENGINE* and *HEATER, AIR DUCT-COOLANT, ENGINE.**

heater, gun. A heating device for low temperature gun operation.

heat of combustion. Heat evolved in the complete oxidation of a substance under standard conditions of pressure and temperature.

heat of explosion. Heat evolved in burning (exploding) a sample in a combustion bomb in an inert atmosphere under standard conditions of pressure and temperature. Products of explosion vary with the *oxygen balance* (which see) of the sample.

heat of formation. Heat evolved, or absorbed, when a compound is formed by combination of its elements. One of the important properties to be determined with regard to explosives.

heat of reaction. Heat evolved when a sample is burned in a combustion bomb in an atmosphere of helium or other inert gas. Products of this reaction are dependent on the *oxygen balance* (which see) of the sample.

heat seeker. A guided missile or the like incorporating a heat-sensitive device for homing on heat-radiating machines or installations, such as an aircraft engine or blast furnace. *Colloq.*

HE,AT-T; HEAT-T (*abbr.*). 'High explosive antitank with tracer.' See: *HEAT.*

heat tests. Tests consisting of heating explosive materials to temperatures above normal atmospheric temperatures, conducted to determine whether the explosives are safe for storage and use under various climatic conditions. When conducted with propellants containing nitrocellulose the tests give an indication as to the useful life. Seven heat tests are recognized and used as follows: *Bergmann-Junk test.* A heat test conducted on a sample of nitrocellulose in which the amount of gas liberated over a given period of time is determined. Used to determine the satisfactoriness (stability) of nitrocellulose for use in propellants. *Methyl violet test.* A sample is heated in a glass tube containing a slip of methyl violet test paper. Observation is made of the time required for the test paper to become salmon pink in color, for evolution of NO₂ fumes, and for explosion to occur. Temperature used is 135°C for single base propellants, and 120°C for double base propellants. Time requirements have been established for individual propellants. (Used for finished propellant testing.) *100°C heat test.* A 0.6-gram sample is heated for two 48-hour periods at 100°C. At the end of each period the sample is examined for indication of volatility. (Used for high explosive testing.) *75°C international heat test.* A 10-gram sample is heated for 48 hours at 75°C and is then examined for indication of decomposition or volatility. (Used for high explosive testing.) *65.5°C surveillance test.* A sample is placed in a bottle, sealed, and

- then stored at 65.5°C until red fumes of nitrous oxide appear. The time to this event is recorded and compared with an established standard. (Used for finished propellant testing.) *Taliani test*. A heat test conducted on explosives at 110°C to determine the rate of evolution of gases of decomposition by observing the pressure in a constant volume over a fixed time, usually 100 minutes. Permissible values have been established for solid propellants. *Vacuum stability test*. A 5.0-gram dried sample (1.0-gram for primary explosives) is heated in a vacuum for 40 hours at 90°C, 100°C and/or 120°C. The evolution of gas at each temperature is recorded. (Used for high explosive and propellant testing.)
- heat, total.** See: *enthalpy*.
- heavier-than-air aircraft.** Any aircraft weighing more than the air it displaces; an aerodyne.
- heavy antiaircraft artillery.** Conventional antiaircraft artillery pieces larger than 90 mm, the weight of which in a trailed mount is greater than 40,000 pounds.
- heavy artillery.** *Specif.* Artillery, other than antiaircraft artillery, consisting of all howitzers and longer-barreled cannon of a caliber larger than those included in the classification of medium artillery.
- heavy bombardment.** 1. A bombardment of great intensity, esp. one with large aerial bombs or other missiles. 2. Short for 'heavy bombardment aviation.'
- heavy case bomb.** See: *bomb, heavy case*.
- heavy drop.** An airdrop in which heavy articles, such as trucks or artillery pieces, are dropped by parachute.
- heavy duty.** Constant duty, or duty under demanding or adverse conditions. Said esp. of equipment.
- heavy machine gun.** (HMG) 1. In Army usage, any machine gun of relatively heavy weight, including caliber .30 water-cooled machine guns and caliber .50 machine guns. 2. Any aircraft machine gun above caliber .30.
- heavy weapons.** All weapons such as mortars, howitzers, guns, heavy machine guns, and recoilless rifles, which are usually part of infantry equipment.
- hedgehog.** 1. a. A portable obstacle, made of crossed poles laced with barbed wire, in the general shape of an hour glass. b. A beach obstacle, usually made of steel bars, channel iron, or the like, imbedded in concrete and used to interfere with beach landings. 2. A concentration of troops securely entrenched or fortified, with arms and defenses facing all directions.
- hedgehog round.** A small, mortarlike, antisubmarine projectile. Called PROJECTOR CHARGE, HIGH EXPLOSIVE, 7.2 INCH.
- hedgehop.** *Slang.* 1. To fly close to the ground, rising up over hedges, trees, houses, or other obstacles as they present themselves. 2. In a less exact sense, to fly at a very low level. Hence, *hedgehopping*.
- hedgehopping bombing.** Bombing from a very low altitude. *Popular.*
- heel.** 1. Upper corner of the butt of a rifle stock held in firing position. 2. Of aircraft: To tilt sideways, as in a bank. Usually with *over*.
- HEI (abbr).** 'High explosive incendiary.'
- height finder.** A radar equipment, used to determine height of aerial targets.
- height of burst.** Vertical distance from the ground, or target, to the point of burst.
- height of image adjuster.** A glass plate with plane surfaces which is tipped one way or the other in the line of sight in one of the internal telescopes of a range or height finder. It deviates the light upward or downward to adjust the image of one eyepiece to the same height as the image visible in the other eyepiece.
- height of site.** Altitude of a gun above some standard level, such as sea level.
- height-range indicator.** See: *INDICATOR, HEIGHT-RANGE*.
- HEISD (abbr).** 'High explosive incendiary self-destructing.'
- HEI-T; HEIT (abbr).** 'High explosive incendiary with tracer.'
- HEITDISD (abbr).** 'High explosive incendiary with dark ignition tracer self-destructing.'
- HEITSD (abbr).** 'High explosive incendiary with self-destructing tracer.'
- HEL (abbr).** 'Human Engineering Laboratory.'
- helical scan; helical scanning.** The scanning motion of a radar antenna in which a point on the axis of the transmitted beam describes a distorted helix. The antenna rotates continuously about the vertical axis while the elevation angle changes slowly from the horizontal to the vertical.
- hell bomb.** An emotional term for 'hydrogen bomb.' See: *bomb, hydrogen*.
- H engine.** An internal combustion, piston engine having two rows of vertically-opposed cylinders on each side of the engine, driving two separate crankshafts geared to a common central shaft.
- HEP (abbr).** 1. 'High explosive plastic.' 2. 'High explosive plastic projectiles.' 3. 'High explosive with plugged tracer cavity.' (Often pronounced as a word.)
- HEPAT (abbr).** 'High explosive plastic antitank.'
- HEP-T (abbr).** 'High explosive plastic with tracer.'
- Hermes.** Name applied to an Army developmental type surface-to-surface ballistic missile.
- HE-S (abbr).** 'High explosive with spotting charge.'
- HESD (abbr).** 'High explosive self-destructing.'
- HE-T (abbr).** 'High explosive with tracer.'
- HETDI (abbr).** 'High explosive with tracer, dark ignition.'
- heterodyne conversion transducer.** A conversion transducer in which the useful output frequency is the sum or difference of the input frequency and an integral multiple of the frequency of another wave.
- HETSD (abbr).** 'High explosive with tracer, self-destructing.'
- hexachloroethane.** See: *CHEMICAL AGENT, HEXACHLOROETHANE MIXTURE*.

hexanite. A mixture of 60 percent TNT and 40 percent hexanitrodiphenylamine (hexite). Slightly superior to TNT in brisance and power. Called 'novit' by the Germans. See: hexanitrodiphenylamine.

hexanitrodiphenylamine. (hexite) A high explosive which is intermediate between tetryl and TNT in its properties. It may be made from benzene derivatives.

hexite. See: hexanitrodiphenylamine.

HF (abbr). 'High frequency.'

H-hour. A term customarily used to refer to the hour at which some specified operation will begin, as an attack, amphibious assault, or movement.

high-altitude bombing. *Specif.* Bombing, esp. horizontal bombing, from a high altitude, such as from an altitude of over 15,000 feet.

high-angle fire. Gunfire from a weapon set at an elevation angle greater than that for maximum horizontal range. Typical of mortar and howitzer fire. See also: plunging fire.

high-angle gun. A cannon, such as an anti-aircraft cannon, capable of firing at a high angle of elevation.

high-angle strafing. Strafing from an airplane at a comparatively high dive angle, e.g., of approximately forty-five degrees.

high-burst ranging. Adjustment of gunfire by observation of airbursts; air-burst ranging.

high capacity bomb. See: bomb, high capacity.

high explosive. (HE) An explosive which when used in its normal manner detonates, rather than deflagrating or burning; that is, the rate of advance of the reaction zone into the unreacted material exceeds the velocity of sound in the unreacted material. Whether an explosive reacts as a high explosive or as a low explosive depends on the manner in which it is initiated and confined. For example, a double base propellant when initiated in the usual manner is a low explosive. However, this material can be made to detonate if the propellant is initiated by an intense shock. Conversely, a high explosive like TNT, under certain conditions, can be ignited by flame and will burn without detonating. High explosives are divided into two classes: primary high explosives and secondary high explosives, according to their sensitivity to heat and shock. (*Note:* This division is not accepted by some authorities who maintain that high explosives and primary explosives are entirely separate entities.) See: low explosive; primary high explosive; secondary high explosive.

high explosive antitank. (HEAT or HE,AT) See: HEAT.

high explosive bomb. See: bomb, high explosive.

high explosive plastic. (HEP) 1. High explosive substance or mixture which, within normal ranges of atmospheric temperature, is capable of being molded into desired shapes; plastic explosive or PE. 2. A type of antitank projectile which defeats armor by producing a spalling action on the side away from the point of impact. The original functioning concept for this projectile type involved plastic deforma-

tion of the bursting charge against the face of the armor plate prior to fuze action.

high explosive plastic antitank. (HEPAT) Term designating a shaped charge and a high explosive plastic charge, intended to produce jet penetration followed by a detonated plastic charge. See also: charge, shaped; high explosive plastic.

high explosive projectile. See: projectile, high explosive.

high frequency. (HF) See: frequency, electronic.

high-level bombing. High-altitude bombing.

high-octane fuel. High-octane gasoline; i.e., gasoline having a high octane number.

high-order detonation. See: detonation.

high-speed carry. See: carry.

high velocity. (HV) As used in connection with artillery, small arms, and tank cannon, generally accepted to have the following meanings: 1. Muzzle velocity of an artillery projectile of from 3000 feet per second to, but not including, 3500 feet per second. 2. Velocity of small arms ammunition between 3500 and 5000 feet per second. 3. Velocity of tank cannon projectile between 1550 and 3350 feet per second. Cf: hypervelocity.

high velocity aircraft rocket. (HVAR) Any large air-to-ground aircraft rocket specially designed for high velocities, esp. such a rocket (six feet in length) developed by the US during WW II. Nicknamed 'Holy Moses.' The HVAR was first used operationally in July 1944.

hinge moment. The tendency of an aerodynamic force to produce motion about the hinge line of a control surface.

More technically, the hinge moment is the product of the aerodynamic force acting upon the center of pressure of a control surface and the perpendicular distance from the center of pressure to the hinge line.

HIR (abbr). 'Hydrostatic arming impact firing rocket.'

Hiroshima bomb. The atomic fission bomb dropped at Hiroshima, Japan, on 6 August 1945, the first atomic bomb to be used against an enemy.

hit. *Specif.* 1. A blow or impact on a target by a bullet, bomb, or other projectile. 2. An instance of striking something with a bomb, or the like, as in 'he had two hits and one miss.'

hit probability. The probability of hits being made on a target out of a given number of projectiles directed at the target.

HL (abbr). 'Mustard-lewisite' (war gas).

HMG (abbr). 'Heavy machine gun.'

HMX (abbr). 'Cyclotetramethylenetetranitramine' (explosive).

HN (abbr). Chemical agent, 'nitrogen mustard gas' (war gas). Individual gases are abbreviated HN-1, HN-2, HN-3.

HOISTING UNIT, BOMB, AIRCRAFT MOUNTING.

An item, consisting of a supporting frame, designed to mount on an aircraft for lifting bombs into place. It may include hoist or winch, sling(s) and/or hoisting adapters.*

HOISTING UNIT, GUNSIGHT, AIRCRAFT MOUNTING. An item, consisting of a supporting frame, designed to mount on an aircraft for installing and/or removing a gunsight. It may include hoist or winch, sling(s) and/or hoisting adapters.*

HOISTING UNIT, PORTABLE, GUIDED MISSILE. An item consisting of a supporting frame, integral hoist or winch, sling(s) and hoisting beam(s). Designed for joining and/or disconnecting guided missile sections and rocket motors. Equipped with rubber tired wheels and removable steering handle.*

HOISTING UNIT, PORTABLE, ROCKET. An item consisting of a supporting frame, integral hoist or winch, sling(s) and hoisting beam(s). Designed for joining and/or disconnecting rocket motor units to warheads, and transferring the complete rocket from the TRUCK, ROCKET to the launcher. See also: **HOISTING UNIT, PORTABLE, GUIDED MISSILE.***

holdback mechanism. In automatic guns, a feature incorporated in chargers of either manual or automatic operation which provides for retention of a gun bolt in the 'out of battery' position.

HOLDER, ADAPTER-BOOSTER, BOMB. A ring shaped device designed to accommodate and position an ADAPTER-BOOSTER, BOMB in a bomb body.*

HOLDER, BLASTING CAP. A holder for a blasting cap for detonating an explosive charge.*

HOLDER, CARTRIDGE, BELT. A device to hold ammunition in individual loops or compartments, usually attached to the belt.*

HOLDER, DESTRUCTOR. A holder for an electrically detonated type of explosive cartridge used to destroy electronic equipment.*

HOLDER, RADIAC DETECTOR. An item specifically designed to accommodate and position a radiac detector. Designed so as to facilitate quick replacement of the item.*

holding beam. *Electronic computers.* A diffuse beam of electrons for regenerating the charges retained on the dielectric surface of an electrostatic memory or storage tube.

Holloman Air Development Center. Air Force center for test and evaluation of missiles and target drones. Also concerned with space biology. Located at Holloman AFB, New Mexico.

hollow charge. A term sometimes used (especially in the United Kingdom) to designate a shaped charge. Term arose from the fact that the explosive charge is hollowed out. Where the hollowed out portion is conical in shape, the charge is sometimes called 'hollow cone charge.' Also called 'beehive' or 'beehive shaped charge.' See: *charge, shaped.*

hollow cone charge. A form of shaped charge. See: *hollow charge.*

HOLSTER, PISTOL. A pocketlike item usually made of leather, designed to hold and protect a pistol. It is fastened to the waist, shoulder, hip, or thigh of a person. It usually conforms to the shape of the pistol and has an opening at the butt to facilitate

quick withdrawal. A belt, strap, or harness may be furnished with the item.*

Holston Ordnance Works. Ordnance Corps field installation, located at Kingsport, Tennessee.

Holy Moses. See: *high velocity aircraft rocket.*

home. Of a guided missile or the like: To direct itself to its target by guiding on heat radiations, radar echoes, radio waves, or other phenomena proceeding from, or inhering in, the target.

homer. A guided missile that *homes.*

homing. 1. Of a missile: One that *homes.* 2. The action of the verb 'home.'

The homing of a missile may be active, semiactive, or passive. If active, the missile is both the originator and receiver of radar signals, and as such is subject both to detection and to jamming by window or tinsel. If semiactive, the missile uses a radar receiver to pick up the target from echoes of pulses sent out by a cooperating ground facility; in which case, the missile's guidance system is subject to jamming but not readily to detection. If passive, the missile depends only on radiation from the target, such as noise, infrared rays, or electrostatic discharge; in which case the missile's guiding system is more or less resistant to detection.

homing device. 1. Any transmitter, receiver, or adapter used for homing aircraft, or used by aircraft for homing purposes; a homer. 2. Any device incorporated in a guided missile or the like to home it on a target.

In sense 2, such a device utilizes light waves, radio waves, heat waves, etc. See: *home.* In the case of a moving target, a homing device may be designed either to maintain a steady pursuit course directly toward the target, or to maintain a lead angle while intercepting on a collision course.

homing guidance. The guidance given a guided missile or the like by built-in homing devices.

homing range. *Specif.* The maximum distance at which a homing device incorporated into an air vehicle becomes effective in respect to a target or to a homing station.

HOMING SET, INFRARED. A complete electronic set required to operate a complete electronic system used for automatically self-guiding a moving object to a target and which utilizes infrared radiation from the target. The equipment in use is self-contained in the moving object.*

HOMING SET, RADAR. A complete electronic set for automatically self-guiding a moving object to a target by the use of radar signals. The equipment in use is self-contained in the moving object.*

homing station. A station at which a beacon emits signals that may be used for homing.

homogeneous armor. See: *armor.*

Honest John. Popular name for the the 762-millimeter rocket system; a surface-to-surface tactical missile, employing solid propellant, developed by the Army. It is launched from a rail-type launcher at an elevation which can be varied to obtain the desired point

- of impact. It can carry either a conventional high explosive warhead or a nuclear warhead.
- honeycomb.** A grid used in certain wind tunnels to straighten airflow.
- hood.** 1. Protective cover for the fuze of a projectile.
2. Metal covering for a motor vehicle engine.
- HOOD, ANTIFLASH.** A knitted cotton garment, for protection of gun crew members, designed to fit over the head and covering the neck and shoulders. It has a circular face opening hemmed with elastic braid.*
- HOOD, ROCKET FUEL HANDLER'S.** An article of headwear designed to provide protection against acids and corrosive fuels.*
- HOOK, PINTLE.** A metal item formed or bent into a curve or at an angle, for catching, holding, sustaining or pulling, specifically designed as the hook portion of PINTLE ASSEMBLY, TOWING.*
- horizon, artificial.** See: artificial horizon.
- horizon, gyroscopic.** See: gyroscopic horizon.
- horizontal base line method.** Method of locating targets or other points by intersection from two observation stations located at opposite ends of a base line.
- horizontal bombing.** Bombing from an airplane in horizontal flight, as distinguished from dive bombing, glide bombing, toss bombing, etc. Also called 'level bombing.'
- horizontal parallax correction.** See: angle of convergence.
- horizontal range.** The distance measured horizontally between a gun and its target; *specif.*, in anti-aircraft gunnery, the distance between a gun and a spot on the ground directly beneath the target.
- HORN, UNDERWATER MINE.** An item designed to protrude from an underwater mine case or an underwater mine float. Its purpose is to actuate a detonator or firing mechanism when struck by an external object.*
- Hotchkiss drive.** In automotive vehicles, a method of drive by which the torque reaction is transmitted to the frame through the springs rather than through a torque tube or a torque arm. See separate entries.
- Hound Dog.** Name given to an Air Force air-to-ground missile with nuclear warhead capabilities. Has relatively long range for strategic bombing suitability.
- HOUSING, RELAY ASSEMBLY, UNDERWATER MINE.** An item designed to inclose a relay assembly that is used in a controlled underwater mine system.*
- how (abbr).** 'Howitzer.'
- howitzer.** (how) A complete projectile-firing weapon with bore diameter greater than 30 millimeters. The howitzer is used to deliver curved fire, with projectiles of lower muzzle velocities than those from the gun (sense 2, which see). The length of bore of a modern howitzer usually lies between 20 and 35 calibers, and the maximum angle of elevation is about 65 degrees. The muzzle velocity, hence range and curvature of the trajectory, can be altered by the use of any of several propelling charges or zones, thus permitting a howitzer to reach targets hidden from gun fire. In length, weight and muzzle velocity the howitzer lies generally between the gun and the mortar. See also: cannon; mortar.
- howitzer carriage.** Wheeled mount or chassis upon which a howitzer is mounted.
- HOWITZER, HEAVY, SELF-PROPELLED.** A complete projectile-firing weapon, with a medium muzzle velocity and a curved trajectory, mounted on a self-propelled vehicle. The bore diameter is larger than 200 millimeters. It is designed for use as a mobile infantry weapon.*
- HOWITZER, HEAVY, TOWED.** A complete projectile-firing weapon with a medium muzzle velocity and a curved trajectory. The bore diameter is larger than 200 millimeters. It does not have facilities for self-propulsion. See also: HOWITZER, LIGHT, TOWED and HOWITZER, MEDIUM, TOWED.*
- howitzer, 8 inch.** See: HOWITZER, HEAVY, TOWED.*
- HOWITZER, LIGHT, SELF-PROPELLED.** A complete projectile-firing weapon, with a medium muzzle velocity and a curved trajectory, mounted on a self-propelled vehicle. The bore diameter is over 30 millimeters through 125 millimeters. It is designed for use as mobile artillery.*
- HOWITZER, LIGHT, TOWED.** A complete projectile-firing weapon with a medium muzzle velocity and a curved trajectory. The bore diameter is over 30 millimeters through 125 millimeters. It does not have facilities for self-propulsion. See also: HOWITZER, MEDIUM, TOWED; HOWITZER, HEAVY, TOWED and HOWITZER, PACK.*
- HOWITZER, MEDIUM, SELF-PROPELLED.** A complete projectile-firing weapon, with a medium muzzle velocity and a curved trajectory, mounted on a self-propelled vehicle. The bore diameter is 126 millimeters through 200 millimeters. It is designed for use as mobile artillery.*
- HOWITZER, MEDIUM, TOWED.** A complete projectile-firing weapon with a medium muzzle velocity and a curved trajectory. The bore diameter is 126 millimeters through 200 millimeters. It does not have facilities for self-propulsion. See also: HOWITZER, LIGHT, TOWED and HOWITZER, HEAVY, TOWED.*
- howitzer, 105 mm.** See: HOWITZER, LIGHT, TOWED.*
- howitzer, 155 mm.** See: HOWITZER, MEDIUM, TOWED.*
- howitzer, 240 mm.** See: HOWITZER, HEAVY, TOWED.*
- HOWITZER, PACK.** A complete projectile-firing weapon with a medium muzzle velocity and a curved trajectory. It is designed to be transported by animal or delivered by parachute. It may function as towed artillery.*
- howitzer, self-propelled, full tracked.** See: HOWITZER, HEAVY, SELF-PROPELLED; HOWITZER, LIGHT, SELF-PROPELLED and HOWITZER, MEDIUM, SELF-PROPELLED.

HPT (*abbr.*). 'High pressure test.'

HS (*abbr.*). 'Hydrostatic.'

H-scope. A modified version of the B-scope.

HT (*abbr.*). 'Mustard gas-agent T' (war gas).

hub cannon. A cannon mounted through a propeller hub of an aircraft.

hull. 1. The outer casing of a rocket, guided missile, or the like. 2. Massive armored body of a tank, exclusive of tracks, motor, turret, and armament.

Human Engineering Laboratory. (HEL) An Ordnance activity at Aberdeen Proving Ground that prepares anthropometric data and other information concerning the human body for consideration by design agencies in Ordnance design projects.

hundred-percent rectangle. A rectangle whose length is eight probable errors in range, and whose breadth is eight probable errors in direction. Its center is the center of dispersion. Also called **rectangle of dispersion**, it is the area in which all shots (except 'wild' shots) will fall when fired with the same data under identical conditions.

hung bomb. A bomb which accidentally remains hanging to the bomb rack after the releasing action has been taken.

hung striker. Defective striker of a grenade fuze, which failed to strike the primer and explode the grenade.

hunt. Of an aircraft, guided missile, or the like: 1. To make weaving motions about its median flight path, as in longitudinal or phugoid oscillation, or to vary in flight speed, as if seeking a new angle of attack, flight path, etc. 2. In popular usage, to yaw repeatedly.
The weaving or yawing may occur without movement of the control surfaces. Cf: **seek**.

hunting. A condition of instability resulting from overcorrection by a control device and resultant fluctuations in the quantity intended to be kept constant.

HV (*abbr.*). 1. 'Hypervelocity.' 2. 'High velocity.'

hv (*abbr.*). 'Heavy.'

HVAP (*abbr.*). 'Hypervelocity armor-piercing.'

HVAPDS (*abbr.*). 'Hypervelocity armor-piercing discarding sabot.'
The abbreviation is frequently separated, as for example, HVAP-DS. It may also be extended by adding '-T' to indicate 'with tracer.'

HVAPDSFS (*abbr.*). 'Hypervelocity armor-piercing discarding sabot fin stabilized.'
The abbreviation is frequently separated, as for example, HVAP-DS-FS. It may also be extended by adding '-T' to indicate 'with tracer.'

HVAP-T (*abbr.*). 'Hypervelocity armor-piercing with tracer.'

HVAR (*abbr.*). 'High velocity aircraft rocket.'

HVAT (*abbr.*). 'Hypervelocity antitank.'

H-vector. The vector representing the magnetic field of an electromagnetic wave. In free space it is

perpendicular to the E-vector and to the direction of propagation.

HVTP (*abbr.*). 'Hypervelocity target practice.'

HVTP-T (*abbr.*). 'Hypervelocity target practice with tracer.'

H-warhead. A warhead containing a nuclear fusion device.

hydrogen bomb. See: **bomb, hydrogen**.

hydrogen cyanide. (AC) See: **CHEMICAL AGENT, HYDROGEN CYANIDE**.

hydrometer. 1. A floating instrument, consisting of a plummet with a stem designed to measure the specific gravity of liquids or solids. 2. An instrument consisting of hydrometer (1) inclosed in a transparent syringe.*

hydropneumatic recoil system. A recoil mechanism (which see) that absorbs the energy of recoil by the forcing of oil through orifices and returns the gun to battery by compressed gas.

hydropneumatic-type equilibrator. See: **equilibrator**.

hydrospring recoil system. A recoil mechanism (which see) that absorbs the energy of recoil by the forcing of oil through orifices and returns the gun to battery by spring action.

hydrostatic fuze. See: **fuze, hydrostatic**.

HYDROSTAT, UNDERWATER MINE. An item designed to be actuated by hydrostatic pressure at a predetermined depth. Its function is to assure proper depth of an underwater mine by locking the cable release mechanism in the underwater mine anchor.*

hygroscopic. Having a tendency to absorb and hold water, particularly moisture from the air.

hyperbolic guidance. The guidance or control of a guided missile or the like in which the difference in the time delay of radio signals transmitted simultaneously from two ground stations, arriving at the missile at different time intervals, controls the position of the missile.
This system is based upon the geometric theorem that the locus of all points of fixed difference in distance from two base points is a hyperbola.

hyperbolic navigation. See: **navigation, hyperbolic**.

hypergolic. Capable of igniting spontaneously upon contact. See: **hypergolic propellant**.

hypergolic propellant. A rocket propellant that ignites spontaneously upon contact with an oxidizer. 'Hypergolic' is a coined word, the element 'golic' being obtained from a German code word 'Gola,' used to refer to a series of rocket propellants containing methyl-aniline, organic amine, pyrol, and certain other compounds.

hypersonic. Of or pertaining to the speed of objects moving at mach five or greater. Cf: **supersonic**.

hypervelocity. (HV) As used in connection with artillery, small arms, and tank cannon, generally accepted to have the following meanings: 1. Muzzle velocity of an artillery projectile of 3500 feet per second or more. 2. Muzzle velocity of a small arms

hypervelocity armor-piercing

projectile of 5000 feet per second or more. 3. Muzzle velocity of a tank cannon projectile in excess of 3350 feet per second. Cf: high velocity.

hypervelocity armor-piercing. (HVAP) A term used to designate a type of artillery projectile consisting of a core of extremely hard, high density material, such as tungsten carbide, contained within a light weight carrier called a sabot (which see). Because of the low total weight, hypervelocity (which see) is obtainable within the allowable pressure of the gun tube. The velocity is rapidly lost but at short ranges the projectile is effective against armor.

hypervelocity armor-piercing discarding sabot.

153 **hypervelocity armor-piercing discarding sabot**

(HVAPDS) A term used to designate a type of HVAP projectile in which the sabot (which see) is designed so that it will become separated from the core a short distance from the muzzle of the gun. Separation of the sabot from the core results in the core becoming the free flight projectile with lowered air resistance. See: hypervelocity armor-piercing.

hypervelocity armor-piercing discarding sabot fin stabilized. (HVAPDSFS) A term used to designate a type of HVAPDS projectile in which the free flight projectile (core) is stabilized in flight by fins rather than by spin. See: hypervelocity armor-piercing discarding sabot.

I

IAS (*abbr.*). 'Indicated airspeed.'

IB (*abbr.*). 'Incendiary bomb.'

IBM (*abbr.*). 'Intercontinental ballistic missile.'
ICBM is preferred.

IBRL (*abbr.*). 'Initial bomb release line.'

ICAO (*abbr.*). 'International Civil Aviation Organization.'

ICAO Atmosphere. See: **Standard Atmosphere.**

ICBM (*abbr.*). 'Intercontinental ballistic missile.'

ice mine. See: **mine, ice.**

ice mining. The breaking of river or lake ice by the action of antitank or antipersonnel mines for the purpose of denying passage to the enemy. Actuation may be effected by control, passage of time, or enemy initiation.

ICM (*abbr.*). 'Intercontinental missile.'

icosahedron gage. See: **gage, icosahedron.**

ideal grain. Propellant granulation which produces the maximum obtainable velocity without exceeding the permissible pressure at any point along the bore.

ideal rocket. A rocket motor or rocket engine that would have a velocity equal to the velocity of its jet gases.

An ideal rocket is assumed as a criterion in rocket design.

ident (*abbr.*). 'Identification.'

identification. (*ident*) *Specif.* In supply usage, the process or means by which, with the aid of applicable drawings, specifications, and catalogs, an item is identified and associated both with the assembly to which it belongs and with the classification of property in which it is procured, stored, and issued.

Identification Code, Department of Defense. See: **Department of Defense Identification Code.**

identification, friend or foe. (IFF) System of radio interrogation and reply (if friend) generally used in connection with radar for identifying an aircraft, ship, or craft. Commonly referred to as IFF.

idler wheel. *Auto.* A roller used to return an endless track or chain to the driving sprocket.

i.e. (*abbr.*). 'That is.'

IFF (*abbr.*). 'Identification, friend or foe.'

igloo. *Specif.* A dome-shaped or rounded structure, usually made of reinforced concrete and earth, normally used for the storage of explosives. A type of magazine (sense 1).

igniter. 1. Any device, chemical, electrical, or mechanical, used to ignite. **IGNITER, BOMB** and other specific types are listed and defined in the entries which follow. 2. Specially arranged charge

of a ready burning composition, usually black powder, used to assist in the initiation of a propelling charge. 3. Device containing such a composition, used to amplify the initiation of a primer in the functioning of a fuze.

IGNITER, BOMB. A metal container designed to be filled with spontaneously combustible material to ignite the filler of incendiary and/or fire bombs. When empty or inert loaded it may be used for training purposes.*

igniter composition. See: **first fire composition.**

igniter, first fire. See: **first fire.**

IGNITER, FRICTION. An item having a file and flint at one end which when rubbed together produce a spark.*

IGNITER, GUIDED MISSILE. A device for effecting ignition of the propelling mixture in the motor or engine of a guided missile.

IGNITER, INCENDIARY DOCUMENT DESTROYER. A device used to ignite the incendiary component of a document destroyer.*

igniter, jato unit. See: **IGNITER, ROCKET MOTOR.**

igniter pad. A black powder charge in the form of a thin pad of cartridge cloth attached to separate-loading propelling charge to facilitate complete and uniform ignition.

IGNITER, RAMJET ENGINE. A pyrotechnic item designed to ignite the combustible mixture in a ramjet engine.*

IGNITER, ROCKET MOTOR. An explosive item designed to ignite the propelling charge in a rocket motor.*

IGNITER, SPOTTING CHARGE, BOMB. A tube containing an explosive designed to relay the detonation wave from the nose fuze to the spotting charge in the base of a practice bomb.*

IGNITER, TIME BLASTING FUSE. A device containing a firing mechanism and suitable ignition material for igniting a **FUSE, BLASTING, TIME.***

IGNITER, TORPEDO. A metal container with a combustible material to ignite the fuel in the combustion chamber of a torpedo.*

igniter train. Step by step arrangement of charges in pyrotechnic munitions by which the initial fire from the primer is transmitted and intensified until it reaches and sets off the main charge. Also called 'burning train.' Explosive munitions use a similar series, called an **explosive train** (which see).

ignitibility. The ease with which the burning of a substance may be initiated.

igniting charge. See: **igniter** (sense 2).

igniting fuze. See: fuze, igniting.

igniting mixture. See: first fire composition.

igniting powder. See: first fire composition.

ignition cartridge. See: CARTRIDGE, IGNITION.

IGNITION CYLINDER, FLAME THROWER. A hollow cylindrical item having more than one chamber in the body parallel to the axis of the bore. These chambers are filled with flammable material which ignites the flame thrower when the ignition grip is engaged.*

ignition delay. *Cartridge actuated devices.* Time interval between actuating the firing mechanism and the beginning of sustained use of pressure in the propellant chamber.

ignition, multistage. An ignition system in a ramjet in which a portion of the fuel is ignited and the products are used to ignite the remainder of the mixture.

ignition system. *Auto.* The electrical system which supplies the spark for the combustion of fuel in certain engines.

An ignition system includes the generator, magneto, distributor, battery, wires, and spark plugs.

ignition system, central tube. System of propelling charge ignition originating along the longitudinal axis, as exemplified by the long primers used in cased charges and the central core igniters used in bag charges.

ignitor. See: igniter.

IGY (*abbr.*). 'International Geophysical Year.'

illum (*abbr.*). 'Illuminant'; 'illuminating.'

illuminant composition. A mixture of materials suitable for use in the candle of a pyrotechnic device, having production of high intensity light as its principal function. The materials used include a fuel (reducing agent), an oxidizing agent, and a binder, plus color intensifier and waterproofing agent. The mixture is loaded under pressure in a container to form the illuminant candle.

illuminating. Indicates, in ammunition nomenclature, that the munition is intended primarily for illuminating purposes. Usually contains a flare and may contain a parachute for suspension in the air.

illuminating fire. Gunfire employing illuminating projectiles delivered to silhouette the enemy, aid observation, and facilitate friendly troop movements.

illuminating grenade. See: grenade, illuminating.

illuminating projectile. See: projectile, illuminating.

illumination signal. See: signal, illumination.

illuminator, target. A transmitting device on a missile or off that is used in guiding on the target.

image frequency. In heterodyne frequency converters in which one of the two sidebands produced by beating is selected: An undesired input frequency capable of producing the selected frequency by the same process.

The word 'image' implies the mirror-like symmetry of signal and image frequencies about the beating oscillator frequency or the intermediate frequency, whichever is the higher.

image plane. *Optics.* The plane in which the image lies or is formed. It is perpendicular to the axis of the lens and is at the focal point. A real image formed by a converging lens would be visible upon a screen placed in this plane.

image ratio. *Receivers.* The ratio of (1) the field strength at the image frequency to (2) the field strength at the desired frequency, each field being applied in turn, under specific conditions, to produce equal outputs.

immersion proof. Unless otherwise specified, *immersion proof* means that an item of equipment when ready for field transport can be submerged for 2 hours in salt or fresh water to a covering depth of 3 feet, and be capable of operating at normal effectiveness immediately after being removed from the water.

impact. The striking of an object against another, as the striking of a projectile or bomb on the target or surface.

impact area. Area in which projectiles or bombs strike or are expected to strike.

impact fuze. See: fuze, impact.

impact pressure. See: pressure, impact.

impact temperature. See: temperature, impact.

impact velocity. The velocity of a projectile or missile at the instant of impact. Also called 'striking velocity.'

impedance matching test set. See: INDICATOR, STANDING WAVE RATIO.*

implosion. 1. A sudden inward burst of particles or gases that brings pressure upon the center of something. 2. The sudden reduction of pressure by chemical reaction or change of state which causes an in-rushing of the surrounding medium. Opposed to explosion (which see) which results in a sudden expansion of the surrounding medium.

improvised grenade. See: grenade, improvised.

impulse. 1. A force lasting over a comparatively short period of time. 2. In specific senses: a. A sudden and brief rise of current or voltage in a circuit. b. The force exerted by a shock wave from an explosion. c. The total force or thrust delivered by a jet engine, rocket motor, or rocket engine in a running of given duration. See: specific impulse. d. The detonative force delivered by a primer when fired. 3. A pulse of electronic energy.

impulse, specific. See: specific impulse.

impulse, total. In jet propulsion usage, the product of the average thrust (in pounds) developed by the motor, times the burning time (in seconds).

in battery. See: battery (sense 3).

inc (*abbr.*). 'Incendiary.'

incapacitation criteria. See: casualty criteria.

incendiary. (*inc*) (*incd*) In nomenclature, indicates that an incendiary effect at the target is intended.

incendiary bomb. (IB) See: BOMB, INCENDIARY.

incendiary grenade. See: grenade, incendiary.

incidence. The act of falling upon or affecting, as light upon a surface.

incident ray. *Optics.* A ray of light which falls upon or strikes the surface of an object such as a lens or mirror. It is said to be incident to the surface. Cf: **reflected ray.**

inclinometer. An item that indicates the attitude of a carrier with respect to the horizontal.*

Inconel. [A trademark name.] A nickel, chrome, and iron alloy designed for corrosion resistance at fairly high temperatures.

incr (*abbr.*). 'Increment.'

increasing twist. See: **twist, increasing.**

increment. An amount of propellant added to, or taken away from, a propelling charge of semifixed or separate loading ammunition to allow for differences in range. Increments are commonly packed in propellant bags made of cartridge cloth, as for the main propelling charge.

independent line of sighting. A system for laying a gun, whereby the angle of site and the angle of elevation (range) mechanism work independently of each other. With the employment of a rocker arm, the angle of elevation mechanism is interposed between the cradle and the bottom carriage.

independent recoil system. A recoil mechanism (which see) that has an independent recuperator, that is, the recuperator is entirely independent of the recoil brake in the recoil mechanism. Cf: **dependent recoil system.**

independent recuperator. A hydropneumatic type of recuperator in which the hydraulic recoil brake and the compressed gas counterrecoil cylinders are entirely independent of each other. Cf: **dependent recuperator.**

indeterminate error. *Firing.* Error in firing which cannot be determined exactly.

index error. Difference between an actual reading and the correct reading on a compass, scale, or other instrument.

index of air, refractive. See: **refractive index of air.**

index of refraction. A number applied to a transparent substance which denotes how much faster light will travel in vacuum than through that particular substance.

Indiana Arsenal. Ordnance Corps field installation, located at Charlestown, Indiana.

indicated airspeed. (IAS) See: **airspeed, indicated.**

indicator. 1. An instrument which presents information transmitted or relayed from some other source. Excludes items having a more specific name, such as **ALTIMETER** (as modified). 2. An item which provides visual presentation of data such as azimuth, bearing, range and position. It does not present specific data, such as volts and amperes obtained from electrical meters.*

INDICATOR, AZIMUTH. An indicator for the display of the terrestrial bearing of a target with respect to a fixed reference point.*

INDICATOR, AZIMUTH AND PANORAMIC. An indicator which presents the angle between a fixed

reference point and a target, and an array of signals received from a segment of the frequency spectrum.*

INDICATOR, AZIMUTH DEVIATION. An indicator which presents the relationships between a target and the azimuth of a directional radio beam.*

INDICATOR, AZIMUTH-ELEVATION. An indicator that displays data for the determination of the terrestrial bearing and vertical spacing between a target and a common reference point.*

INDICATOR, AZIMUTH-ELEVATION-RANGE. An indicator that displays data for the determination of the terrestrial bearing, vertical spacing, and range between a target and a common reference point.*

INDICATOR, AZIMUTH-RANGE. An indicator that displays data for the determination of the terrestrial bearing and range between a target and a common reference point.*

INDICATOR, BEARING. An indicator that displays data for the determination of the terrestrial bearing between a target and a fixed reference point.*

INDICATOR, COURSE. An indicator that displays the angular value of the course of an aircraft, ship, or ground vehicle.*

INDICATOR, COURSE-DISTANCE-TRACK. An indicator which displays the angle measured clockwise from true north to a line connecting the point of origin and the point of destination, the spacing between two points, and the actual path of an aircraft relative to the ground.*

INDICATOR, ELEVATION. A component which presents visually the angle between a fixed reference point and a target in a vertical plane. May include accessories.* *Specif.* Electrical instrument on some guns that shows the quadrant elevation to be used; it is part of a remote control system.

INDICATOR, ELEVATION DEVIATION. A component which presents visually the relationship between a target and the elevation of a directional radio beam. May include accessories.*

INDICATOR, FAULT LOCATING. An item specifically designed to indicate by means of push buttons and associated indicator lights the component of an electronic set, central or system, in which a malfunction has occurred. It does not make quantitative or qualitative tests such as are provided by test sets.*

INDICATOR, FIN POSITION. An indicator specifically designed to present visual information regarding the attitude of a guided missile's fin position.*

INDICATOR, HEIGHT. A component which presents visually the vertical distance between two points. May include accessories.*

INDICATOR, HEIGHT-RANGE. An indicator that displays data for the determination of the vertical spacing and range between a target and a common reference point.*

indicator, moving target. (MTI) Radarscope that distinguishes between moving and fixed objects, or shows only moving targets. See also: **moving target indication.**

indicator, pitch. See: **pitch indicator.**

INDICATOR, PRELAUNCH CHECKOUT. An indicator which, when used with associated equipment, visually displays the operational readiness of a guided missile, and/or the carrier from which it is launched.*

INDICATOR, PRESSURE. An indicator which indicates the pressure of a gas or liquid in a given system.*

indicator, propellant temperature. A unit consisting of a standard cartridge case with propelling charge, but without primer. The cartridge case is sealed with a plug through which the stem of a dial type thermometer extends into the propelling charge. The unit is contained in a fiber container which is closed with a transparent plastic cover. The temperature shown by the thermometer is used to determine the temperature corrections to be applied to firing table figures.

INDICATOR, RADIAC. An item designed to display radioactivity detection, identification, or computation data.*

INDICATOR, RADIOLOGICAL. An item designed to display the occurrence of radioactivity above a predetermined value.*

INDICATOR-RECORDER, TRANSMISSOMETER. A component which performs the dual functions of presenting visual information from other components or sets and makes a permanent representation of information received from other components or sets.*

INDICATOR, STANDING WAVE RATIO. An item designed to determine the ratio of current or voltage at a loop in a transmission line or waveguide to the value of a node. May include the following: rectifier, amplifier, detector, adapters, couplings, meters, probes, radio frequency plumbing, accessories, and spare parts.*

INDICATOR, TURN AND SLIP. An indicator which indicates the direction of turn, approximate rate of turn, and slippage of an aircraft.* Sometimes called 'turn and bank indicator.'

INDICATOR, VIDEO. An indicator designed to display the picture signal in a television set.*

INDICATOR, WHEEL ALIGNMENT. A composite group of gages and attachments, with or without runway facilities, designed to measure the degree of caster, camber, kingpin angle, toe-in and/or turning radius of automotive vehicle wheels.*

indicator, wind component. Device which mechanically determines the range and deflection components of the computed wind that is equivalent to all true winds encountered by a projectile in flight.

indirect fire. Gunfire delivered at a target that cannot be seen from the gun position or firing ship.

indirect laying. Aiming a gun either by sighting at a fixed object, called the aiming point, instead of the target, or by using a means of pointing other than a sight, such as a gun director, when the target cannot be seen from the gun position.

indirect observation. Study of photographs of terrain, etc., instead of visual observation of the ground itself, which is direct observation.

indirect pointing. See: indirect laying.

individual control. Method of controlling gunfire used with machine guns. Control of the firing by the gunner who aims, sights, and fires his gun by himself.

individual tracer control. Machine gun fire control by the operator of each individual weapon. The gunner estimates the proper lead, and adjusts his fire on the target by observation of the tracer stream.

induced angle of attack. See: angle of attack, induced.

induced drag. See: drag, induced.

industrial mobilization. Transformation of industry and other productive facilities and contributory services from their peacetime activities to the fulfillment of the munitions program necessary to support the military effort.

industrial security. That portion of internal security which refers to the protection of industrial installations, resources, utilities, materials, and classified information essential to protection from loss or damage by enemy-inspired action, other than as a result of organized military attack.

industrial security office. Any command, office, unit, agency, or person within a military department, designated by that military department as being responsible for exercising control over industrial security matters at a facility for which that department is cognizant.

inert. Descriptive of condition of a munition, or component thereof, which contains no explosive, pyrotechnic or chemical agent.

inertia. The property of any material to resist change in its state of motion. See: setback force; set forward force and cf: moment of inertia.

inertia firing mechanism. This type of firing mechanism, like the continuous-pull type, is used on weapons firing fixed and semifixed ammunition. This mechanism is characterized by a heavy firing pin and guide assembly which moves forward by inertia to strike the primer after the action of the firing pin spring has stopped. The firing pin and guide assembly is retracted by a separate retracting spring. The mechanism cocks when the breechblock is opened and remains cocked during loading and closing of the breechblock. It is fired by pulling a lanyard, striking a lever, or by other mechanical means.

inertia fuze. See: fuze, nondelay.

inertial control. Control exercised through inertial guidance.

inertial force. 1. *General.* Force produced by change in magnitude and/or direction of velocity. 2. In the launching of projectiles or missiles, large accelerations occur, which result in correspondingly large inertial forces, called setback forces. See: setback force.

inertial guidance. A kind of guidance effected by means of mechanisms that automatically adjust the missile after launching to follow a given flight path,

the mechanisms reacting to inertial forces during flight.

inf (*abbr.*). 'Infantry.'

infantry mil. See: **mil.**

infernal machine. Disguised or cleverly concealed explosive device, usually intended for sabotage. Distinguished from an 'open bomb.' (Both terms now rarely used.) See: **bomb**, **open**.

infiltration. Movements of individuals or vehicles, singularly or in small groups at extended and irregular intervals. This movement is used when a maximum of secrecy and deception is desired. It provides the best possible protection from enemy air observation and attack but is very difficult to control.

infinity. The extreme point of distance. In optics, the term is used to denote a distance sufficiently great so that light rays coming from that distance are practically parallel to one another.

infinity method. Method of adjusting two lines of sight to make them parallel. Lines are adjusted on an object at great distance, for example, a star.

infl (*abbr.*). 'Inflammable.'

inflammable. (*infl*) Preferred term is **flammable** (which see). Cf: **nonflammable**.

influence fuze. See: **FUZE**, **PROXIMITY**.

infrared homing set. See: **HOMING SET**, **INFRARED.***

infrasonic frequency. A frequency below the audible range.

inherent stability. See: **stability**, **inherent**.

inhibited oil. Lubricating oil to which a compound has been added in order to prevent corrosion of the metal with which it is in contact.

inhibitor. A material applied to surface(s) of propellant grains to prevent burning on the coated surface(s).

initial aiming point. Point on which a gun is sighted to establish a reference line from which direction angles for targets are measured. From this reference line, other aiming points that give the direction of the targets are measured off. This method of aiming is used in indirect laying.

initial air space. See: **initial free space**.

initial bomb release line. (IBRL) Imaginary line around a defended area or objective over which a bomber should release its first bomb in order to obtain a hit on the near edge of the area or objective. See: **bomb release line**.

initial detonating agent. See: **primary high explosive**.

initial free space. In interior ballistics, the portion of the *effective chamber capacity* not displaced by propellant; **initial air space**.

initial lead. Amount a gun is pointed in front of, above, or below a moving target when opening fire. This amount allows for the distance the target will travel while the projectile is in flight.

initial mass. The mass of a rocket missile at the beginning of its flight.

initial point. 1. First point at which a moving target is located on a plotting board. 2. Well defined point, easily distinguishable visually and/or by means of radar, used as a starting point for the bomb run on to the target. The distance from the initial point to the target will be governed by type of bombing, type of airplane, and altitude bombing.

initial radiation. The nuclear radiation accompanying an atomic explosion and emitted from the resultant fireball; immediate radiation. It includes the neutrons and gamma rays given off at the instant of the explosion, and the alpha, beta, and gamma rays emitted in the rising fireball and the column of smoke. In contrast to residual radiation, its delivery to persons and objects on the earth's surface is terminated by the removal of the source (fission products in the atomic cloud) from within effective radiation range of the earth by the rising cloud.

initial shot start pressure. In interior ballistics, the pressure required to start the motion of the projectile from its initial loaded position. In fixed ammunition includes pressure required to separate projectile and cartridge case and to start engraving the rotating band.

initial velocity. (IV) The projectile velocity at the moment that the projectile ceases to be acted upon by propelling forces. For a gunfired projectile the initial velocity, expressed in feet or meters per second, is also called 'muzzle velocity.' It is obtained by measuring the velocity over a distance forward of the gun, and correcting back to the muzzle for the retardation in flight. For a rocket a slightly fictitious value is used. The fictitious initial velocity is the velocity at the launcher which would produce the actual velocity at the point of burnout if there were no thrust. The initial velocity of a bomb dropped from an airplane is the speed of the airplane.

initial yaw. The yaw of a projectile the instant it leaves the muzzle of a gun.

initiating agent. An explosive material which has the necessary sensitivity to heat, friction, or percussion to make it suitable for use as the initial element in an explosive train. See: **primary high explosive**; **priming composition**.

initiation. 1. As applied to an explosive item, the beginning of the deflagration or detonation of the explosive. 2. The first action in a fuze which occurs as a direct result of the action of the functioning medium. 3. In a time fuze, the starting of the action which is terminated in the functioning of the fuzed munition.

initiation, base. Detonation initiated at the base (rear) of the charge.

initiation, peripheral. Simultaneous initiation of detonation around the entire periphery of a cylindrical explosive charge. It may be accomplished from point initiation by inserting a disc of inert material, of proper dimensions, in the explosive column.

initiation, plane wave. Simultaneous initiation at all points of the rear surface of the main explosive

charge by a flat detonation wave, usually accomplished by a composite explosive charge of proper dimensions.

initiation, point. Application of the initial impulse from the detonator to a single point on the main charge surface; for a cylindrical charge this point is usually the center of one face.

initiator. A device used as the first element of an explosive train, such as a detonator or squib, which upon receipt of the proper mechanical or electrical impulse produces a burning or detonating action. It generally contains a small quantity of a sensitive explosive.

INITIATOR, CARTRIDGE ACTUATED. An item designed to provide gas pressure for activation of various aircraft components such as canopy removers, thrusters, catapults, and the like.*

injection pressure. The pressure difference between the total pressure at the fuel outlet orifice and the pressure in the combustion chamber.

injector. *Specif.* A device for injecting fuel and an oxidizer into the combustion chamber of a rocket engine.

in-line engine. An internal combustion, reciprocating engine in which the cylinders are arranged in one or more straight rows. Distinguished esp. from a radial engine.

An in-line engine may be upright or inverted, and includes V or W engines. In-line engines are usually liquid cooled.

inner body. Any closed body located in the ramjet duct, around which the air taken into the diffuser must flow.

inner liner. The inner shell of a combustion chamber in certain jet engines, inserted to diffuse the compressed air in the chamber and maintain an efficient flame pattern. Also called a 'burner basket,' 'flame holder,' or 'flame tube.'

input. *Electronic computers.* The information which is transferred from external storage into the internal storage; a modifier designating the device performing this function.

INSERT, BODY ARMOR. A removable section designed for use in compartments of ARMOR, BODY, FRAGMENTATION PROTECTIVE to resist penetration of fragmentation type missiles and small arms projectiles.*

insert earphones. *Electroacoustics.* Small earphones which fit partially inside the ear.

inspection by attributes. An inspection system by which a product is inspected on the basis of either compliance or noncompliance without regard to the extent of deviation from the requirement. Use of 'go' and 'not-go' gages, as applied to a dimensional requirement (attribute) is an example of inspection by attributes. Cf: *inspection by variables.*

inspection by variables. An inspection system in which quantitative determination is made for each item in the sample of the characteristic being inspected, and

the result recorded. The accumulated data are then analyzed statistically and decision made as to acceptability. Cf: *inspection by attributes.*

INSPECTION PENETRANT. An oil or ester base liquid used with a developer to detect surface flaws in metals, ceramics, glass, and some plastics. Penetrants will reveal only defects which are open to the surface and which are of sufficient magnitude to permit entrance of the penetrant by capillary action. The penetrant remains in the opening until it is withdrawn by the greater capillary action of the developer.*

inspection penetrant developer. A finely divided material of high capillarity which provides an ideal background for good contrast with inspection penetrants.*

inst (abbr). 'Instantaneous.'

INSTALLATION KIT, ELECTRONIC EQUIPMENT. A collection of items, not all having the same basic name, which are of a supplementary nature to a major component or equipment. The items within the collection are utilized to physically establish a major component or equipment in a position conducive to safe, efficient operation. See also: **MODIFICATION KIT, ELECTRONIC EQUIPMENT.** For kits consisting of assorted hand tools, see: **TOOL KIT (as modified).***

instantaneous fuze. See: *fuze, superquick.*

instantaneous recording. *Electroacoustics.* A recording which is intended for direct reproduction without further processing.

instruction. *Electronic computers.* A set of characters which defines an operation together with one or more addresses (or no address) and which as a unit, causes the computer to operate accordingly on the indicated quantities. The term 'instruction' is preferable to the terms 'command' and 'order'; command is reserved for electronic signals; order is reserved for 'the order of the characters' (implying sequence) or 'the order of the interpolation,' etc.

instrumental error. Repeated error due to faulty adjustment of an instrument or to a defect in it. Also called systematic error.

instrument light. Light that enables the operator to see the scales and dials of instruments in the darkness, especially on optical instruments, flight instruments, and gun mounts.

intake manifold. See: *manifold.*

integrating accelerometer. See: *accelerometer, integrating.*

integrating circuit. A circuit whose output voltage is proportional to the product of the instantaneous applied input voltages and their duration. Some such circuits are made to give output proportional to input frequency and amplitude.

INTEGRATOR. A mechanical device for ascertaining the area and moments relative to any axis of any figure by tracing its outline.*

integrator. 1. *Electronic computers.* A device whose

output is proportional to the integral of an input signal. 2. See: **INTEGRATOR**.

intellectual property. Intangible creations of the mind, including inventions, useful 'know-how,' technical and ornamental designs, and literary, art and other products of man's ingenuity.

intercarrier sound. The method employed in those television receivers which make use of the television picture carrier and the associated sound carrier to produce a frequency-modulated signal whose center frequency is equal to the difference between the two carrier frequencies.

interceptor missile. *Specif.* A guided missile used to intercept aircraft or guided missiles. See also: **antimissile missile**.

interchangeable assembly. Assembly in which any and all mating parts will assemble and function properly without the need for any machining or fitting at assembly. There are also instances in which a sub-assembly must be interchangeable in the complete assembly, although the parts within the subassembly need not necessarily be interchangeable.

INTERCOMMUNICATION SET. A complete wired system specifically designed to provide two-way voice communication which may be amplified. It may be supplemented by signal devices, between any two stations or from one station to any number of other stations in the set.*

intercontinental ballistic missile. (ICBM) A ballistic missile which has a range of not less than 5000 nautical miles.

interdiction. The prevention or destruction of, or interference with, enemy movements, communications, and lines of communication, as by gunfire, shelling, or bombing; the action of making it very difficult for the enemy to move from one place to another.

interdiction bombing. Bombing done for purposes of interdiction.

interdiction fire. Gunfire delivered in the process of interdiction; *specif.*, the fire placed on a specified place, as a railyard, assembly area, crossroad, or the like, and intended to prevent its effective use.

interf (abbr). 'Interference.'

interface. 1. The boundary between two media, especially as transited by a propagated wave, e.g., the inner surface of the bore of a gun. 2. The boundary, electrical or mechanical, existing between two systems or components.

interference. (interf) 1. The aerodynamic influence of two or more bodies on one another. 2. *Physics.* The effect of superimposing two or more trains of waves. The resulting amplitude is the algebraic sum of the amplitudes of the interfering trains. When two sets of spherical waves interfere, a system of stationary nodes and antinodes is formed, which in optics is known as interference fringes. See: **interferometer**. 3. *Radio communication.* The disturbance of reception owing to strays or undesired signals. 4. *Radar.* Confusing signals accidentally produced on the indicator by the effects of either friendly or enemy electrical apparatus or machinery or by atmospheric phenomena. 5. *Receivers.* In a

signal transmission system, either extraneous power which tends to interfere with the reception of the desired signals, or the disturbance of signals which results. 6. The total amount of deformation which must be effected in order to force an internal member into a smaller external member.

interference fit. See: **fit**.

interferometer. An apparatus used to produce and show interference between two or more wave trains coming from the same luminous area, and also to compare wave lengths with observable displacements of reflectors, or other parts, by means of interference fringes. An interferometer is frequently used to obtain quantitative information on flow around bodies in wind tunnels. See: **interference**.

interior ballistics. See: **ballistics**.

interlacing. A technique in television scanning wherein, if the lines are sequentially numbered, all the odd-numbered lines are scanned first, following which all the even-numbered lines are scanned.

intermediate frequency. In superheterodyne reception, a frequency resulting from the combination of the received modulated carrier frequency and the locally generated oscillator frequency.

An intermediate frequency is so called because it lies between the modulated radio frequency and audio frequency.

intermediate range ballistic missile. (IRBM) A ballistic missile which has a range of approximately 1500 nautical miles.

intermittent jet. A pulsejet engine.

intermodulation. *Electroacoustics.* The modulation of the components of a complex wave by each other in a nonlinear system.

internal ballistics. 'Interior ballistics' is the preferred term. See: **ballistics**.

internal combustion engine. Any engine in which the pressure of gases formed by combustion of fuel is directly used to give the engine motion; *specif.*, a piston-driven engine of this type that converts back-and-forth movement into rotary movement by means of a crankshaft.

This term is sometimes applied to jet engines, and in its broad meaning can be applied to rocket engines; the common designation for engines of this type, however, is 'reaction engine.'

internal combustion reciprocating engine. An internal combustion engine that converts back-and-forth movement into rotary movement.

international candle. An international unit of luminous intensity which is the light emitted by five square millimeters of platinum at solidification temperature.

International Geophysical Year. (IGY) An 18-month period, 1 July 1957 to 31 December 1958, of intensive study of the earth, oceans, atmosphere, and the sun, with collection of data on a worldwide basis, by about 10,000 scientists, engineers, and technicians, cooperating at some 2,000 stations in 64 countries, and with emphasis on measurements and observations required simultaneously over the world, or to be repeated at varying intervals of time to reveal long-range trends in the environment. The International

- Council of Scientific Unions (ICSU) in 1952 named a committee for IGY, and invited worldwide participation. In the United States, the National Academy of Sciences, affiliated with ICSU, established the U. S. National Committee for the International Geophysical Year. The United States program included support of experiments formerly lacking financial or logistic assistance or international coordination; received financial support by Congress through the National Science Foundation, and scientific, financial, and logistical contributions from the Department of Defense and its agencies. Participating countries: Argentina, Australia, Austria, Belgium, Bolivia, Brazil, Bulgaria, Canada, Ceylon, Chile, China (Communist), China (Republic), Colombia, Cuba, Czechoslovakia, Denmark, Dominican Republic, Ecuador, Egypt, Ethiopia, Finland, France, Germany (East), Germany (West), Ghana, Greece, Guatemala, Hungary, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Japan, Korea (Republic), Malaya, Mexico, Mongolian Republic, Morocco, Netherlands, New Zealand, Norway, Pakistan, Panama, Peru, Philippines, Poland, Portugal, Rumania, Spain, Southern Rhodesia, Soviet Union, Sweden, Switzerland, Tunisia, Union of South Africa, United Kingdom, United States, Uruguay, Venezuela, Vietnam, Yugoslavia.
- international heat test, 75°C.** See: **heat tests.**
- interpolator.** A simple calculating device used to give fractions of the units of firing data that are computed by a percentage corrector or by other instruments which correct observed data for the effect of wind, speed, direction, etc.
- interrogation.** *Electronics.* The act of transmitting radar pulses to trigger a radar beacon for purposes of identification and navigation; the pulses themselves. Also called the 'challenge.'
- interrogator.** (*intg*) An electronic device for transmitting challenging or interrogating pulses for reception and response by a transponder; also the radio or radar beacon used for this purpose.
The interrogator is one component of the **interrogator-responder** (which see).
- interrogator-responder.** An electronic device combining a transmitter for sending pulses interrogating a transponder and a receiver for receiving and displaying the answering pulses of the transponder. This device consists of an **interrogator** and a **responder**.
- INTERROGATOR SET.** A complete electronic set specifically designed to transmit predetermined signals for reception by coordinated transponding equipment and receive and interpret the reply of the transponding equipment. It may also transmit signals for the remote actuation of additional equipment, such as indicators, servo amplifiers, and the like.*
- INTERROGATOR-TRANSPONDER SET.** A complete electronic set which combines the functions of an **INTERROGATOR SET** and **TRANSPONDER SET**.*
- interrupted fire.** Automatic fire delivered in short series of bursts.
- interrupted-screw breechblock.** See: **breechblock, interrupted-screw.**
- interrupter.** A barrier in a fuze which prevents transmission of an explosive effect to some element beyond the interrupter. Used to obtain **fuze safety** (which see).
- interrupter gear.** A synchronizing gear for machine guns, so called because it interrupts the firing mechanism of the gun or guns to allow a propeller blade to pass the muzzle.
- intervalometer.** An electrical device used in bombing, by which data is preset in order to drop a desired number of bombs at a constant predetermined interval.
- intg** (*abbr.*) 'Interrogator.'
- intrusion.** For a fuze which is partially housed within the missile, the length of that portion of the fuze which intrudes.
- inverted engine.** An in-line engine in which the cylinders are placed below the crankshaft.
- INVERTER, VIBRATOR.** A device which through use of an interrupter vibrator and associated transformer or other inductive device changes a direct current input to an alternating current input.*
- ion.** A particle consisting of a positively or negatively charged atom or group or atoms.
- ion engine.** A species of reaction engine in which thrust is obtained by ejection of a stream of ionized atomic particles.
- ION EXCHANGE COMPOUND.** A chemical agent used to soften water by demineralization and to treat other compounds by means of a chemical substitution of positive and negative radicals of compounds (ions). Includes natural and resinous types of zeolites. Most types are capable of being regenerated.*
- ionization chamber.** An instrument consisting essentially of a closed chamber or tube of air or gas with two electrodes, used for detecting and measuring nuclear radiation.
Radiation passing through an ionization chamber ionizes the air or gas in the chamber, permitting detection and measurement of the radiation by electrical means.
- ionosphere.** That portion of the earth's atmosphere beginning about 30 miles above the earth's surface, which consists of layers of highly ionized air capable of bending or reflecting certain radio waves back to the earth.
- Iowa Ordnance Plant.** Ordnance Corps field installation, located at Burlington, Iowa.
- IRBM** (*abbr.*) 'Intermediate range ballistic missile.'
- IRFNA** (*abbr.*) 'Inhibited red fuming nitric acid.'
- iron sight.** Any metallic gunsight, as a blade sight, as distinguished from an optical or computing sight.
- irritant gas.** A nonlethal gas, causing irritation of the skin and flow of tears. Any one of the family of 'tear gases' used for training and riot control. See: **tear gas.**

isobaric adiabatic flame temperature. Adiabatic flame temperature attained in a constant pressure system.

See: **adiabatic flame temperature.**

isochoric adiabatic flame temperature. Adiabatic flame temperature attained in a constant volume system.

See: **adiabatic flame temperature.**

iso-octane. An octane with a particular branch structure (2, 2, 4-trimethylpentane) that gives it high anti-

knock value when used in liquid fuel. Called 'octane' for short. See also: **octane number.**

item name. A basic name, or basic name followed by those modifiers necessary to differentiate between item concepts for items having the same basic name. Example: TRUCK, CARGO. See also: **basic name** and **nomenclature.**

IV (*abbr.*) 'Initial velocity.'

J

- jacket.** 1. Cylinder of steel covering and strengthening the breech end of a gun or howitzer tube. 2. The water jacket on some machine guns. 3. See: **jacket, bullet.**
- jacket, bullet.** A metal shell surrounding a metal core, the combination comprising a bullet for small arms. The jacket is either composed of, or coated with, a relatively soft metal such as **gilding metal** (which see) which engages the rifling in the bore, causing rotation of the bullet.
- jam.** 1. Of a machine gun, full-automatic, semiautomatic or other firearm: To stick or become inoperative because of improper loading, ejection, or the like. 2. To make the transmissions of a radio unintelligible; to make a radio or radar set ineffective, either by the use of counter-transmissions or by the use of a confusion reflector. See: **electronic jamming.** 3. An instance of jamming.
- jamming.** 1. Electronic jamming. 2. Of equipment: That jams.
- jamming device.** Any device used to transmit or reflect electromagnetic waves for jamming purposes.
- JAN (abbr).** 'Joint Army-Navy.' (Often pronounced as a word.)
- JANAF (abbr).** 'Joint Army-Navy-Air Force.' (Often pronounced as a word.)
- JANAP (abbr).** 'Joint Army-Navy-Air Force Publications.' (Often pronounced as a word.)
- JATO (abbr).** 'Jet assisted takeoff.' (Often pronounced as a word.)
- jato, reverse.** See: **rocket motor, reverse.**
- jato unit.** A ROCKET MOTOR, consisting of one or more continuous type combustion units closed at one end, with a nozzle type opening(s) at the other end containing a propelling charge which, when ignited, creates a gas pressure that is expelled through the nozzle(s), exerting a propulsion action. The item is normally used to assist the initial action of the main propulsion unit(s). Terms JATO and JATO UNIT discontinued as official names in favor of ROCKET MOTOR or ROCKET ENGINE.
- JB-2.** An American version of the German V-1 flying bomb. Also called the 'Loon.'
- JCS (abbr).** 'Joint Chiefs of Staff.'
- jeep.** A one-quarter ton, four-wheel-drive, utility vehicle in wide use in all services.
- Jefferson Proving Ground.** Ordnance Corps field installation, located at Madison, Indiana.
- jel.** Variant of 'gel.'
- jellied gasoline.** See: **CHEMICAL AGENT, INCENDIARY OIL.**
- jerry can.** A five-gallon, flat-sided, narrow can, adapted from a German-made can, easily stacked and transportable, and adapted by special openings for discharging fuel. Also called 'blitz can.' *Slang.*
- This term is sometimes written solid, *jerrican*, a French spelling of the English loan word. See also: **CAN, GASOLINE, MILITARY.**
- jet.** 1. A **jet stream** (which see). 2. a. In a carburetor, a nozzle or tube of a predetermined size for metering the flow of fuel. b. The fuel flow so metered. 3. A jet engine. 4. A jet airplane. 5. As pertains to shaped charge ammunition: a. From a lined charge: The slender, generally fastest moving part of a liner after collapse. b. From an unlined shaped charge: The central stream of high-velocity gases produced upon detonation.
- jet assist.** 1. An assist in thrust given an airplane or missile by use of a jet engine or a jato unit. 2. The unit that provides this assist. Cf: **rocket assist.**
- jet assisted takeoff. (JATO)** A takeoff assisted by use of a jet stream, especially that of a ROCKET MOTOR. See also: **jato unit.**
- jet bomb.** A flying bomb using one or more jet engines for propulsion. See: **bomb, flying.**
- jet breakup.** As pertains to shaped charge ammunition: Breaking of jet into discrete particles. The time of breakup is a factor in effective penetration. Bifurcation: radial breakup of the jet into two distinct jets. Polyfurcation: radial breakup of the jet resulting in two or more distinct jets.
- jet engine.** 1. A species of reaction engine, namely, an engine that takes in air from outside for use as a fuel oxidizer and projects a jet of hot gases backward to create thrust, the gases being derived from combustion within the engine. 2. In a broader sense, any reaction engine. *Obsolescent.*
- JET FUEL.** A liquid petroleum distillate refined especially for use in jet engines.*
- jet horsepower.** The thrust horsepower of a jet stream.
- jet motor.** A rocket motor. See: **jet engine.**
- jet-propelled. (JetP)** *Specif.* Propelled by one or more jet engines (esp. sense 1), as in *jet-propelled aircraft, jet-propelled missile, jet-propelled squadron.*
- jet propulsion. (JP)** Propulsion by means of a jet of gas or fluid; *specif.*, propulsion by means of a jet engine (sense 1) or engines.
- Jet Propulsion Laboratory. (JPL)** Government-owned, contractor-operated installation located at Pasadena, California. The contractor is the California Institute of Technology. Formerly operated as an agency under the U. S. Army Ordnance Corps, with responsibility for research and development in jet and

- rocket propulsion and associated problems including aerodynamics and guidance. This agency was transferred to the newly created National Aeronautics and Space Administration, effective 3 December 1958.
- jet stream.** The stream of gas or fluid expelled by any reaction device, esp. the stream of combustion products expelled from a jet engine, rocket engine, or rocket motor.
- jet thrust.** The thrust (which see), measured in pounds, developed by a jet engine, rocket engine, or the like, in reaction to its jet stream; *specif.*, the thrust of a jet engine.
- jet vane.** A fixed, adjustable, or movable vane placed directly in a jet stream to improve stability or control, especially at low speeds.
- jet velocity.** 1. The velocity of a jet stream, usually measured with respect to surrounding air. 2. Pertaining to shaped charge ammunition: The measured velocity is usually the velocity of the tip of the moving jet after detonation of the charge but before penetration of the target. For conical liners in cylindrical charges, the tip moves fastest, the tail of the jet slowest, with a gradient of velocities between.
- jig.** *Mechanical.* A device fastened to or inclosing a piece of work. It is a special tool designed to give the location of work during actual machining and must be equipped with facilities for guiding cutting tools, such as drills, to insure all parts manufactured with the help of a particular jig shall conform to duplicate dimensions.*
- jitter.** The jittering or unstable motion of a signal on a cathode-ray screen.
- jitter, beam.** See: beam jitter.
- joint.** Of a force, organization, operation, plan, mission, etc.: Belonging to, or carried out by, two or more military services of the same nation, as in 'joint campaign,' 'joint board,' 'joint command.'
- When all services are not involved, each participating service should be identified, as in 'Joint Army-Navy operation.'
- Joint Army-Navy-Air Force Publications. (JANAP)** A series of publications produced by supporting agencies of the Joint Chiefs of Staff and intended for distribution through the approved offices of distribution within the Army, Navy, and Air Force.
- Joliet Arsenal.** Ordnance Corps field installation, located at Joliet, Illinois.
- jolt and jumble tests.** A standardized program of tests intended to simulate the shocks to which various components of ammunition are subjected in transportation and handling.
- Jominy test.** A test to determine the hardenability of steels. It is conducted by cooling the end of a bar of the test steel under standard conditions in a prescribed manner and determining the resulting hardness pattern.
- JP (abbr).** 'Jet propulsion.'
- JPL (abbr).** 'Jet Propulsion Laboratory.'
- jump.** 1. Movement (usually upward) of a gun tube or barrel when the gun is fired. 2. Angle of jump, which see.
- JUNCTION BOX.** An inclosure of other than cast metal designed to house, mount and protect, but does not include wiring connections or electrical devices such as terminals and/or terminal boards, switches, jacks, fuseholders, connectors, circuit breakers and the like.*
- Jupiter.** Name applied to an Army-developed intermediate range ballistic missile. Utilizes liquid fuel and inertial guidance. Capable of carrying a thermonuclear warhead.

K

- K.** 1. In artillery ground fire, a factor to be applied to the actual range to a point in order to determine the range which must be fired to hit that point. The K factor is the result of registration and/or the solution of a meteorological message. It is expressed as 'plus' or 'minus' so many yards per thousand units of actual range. Cf: **K transfer**. 2. The ratio of propellant surface to nozzle throat area. 3. **Kelvin scale** (which see).
- K-14 sight.** A gyroscopic computing gunsight employing a mechanical range-control system.
- K-18 sight.** A gyroscopic computing gunsight employing an electrical range-control system.
- kamikaze.** [Japanese 'divine wind.'] 1. An action taken by certain Japanese pilots during WW II, in which they flew their airplanes as missiles against Allied targets, involving self-destruction on the part of the pilots; any like action performed by any pilot. 2. Short for 'kamikaze airplane,' 'kamikaze attack,' or 'kamikaze pilot.'
- Kankakee Ordnance Works.** Ordnance Corps field installation, located at Joliet, Illinois. A sub-installation of Joliet Arsenal.
- Kansas Ordnance Plant.** Ordnance Corps field installation, located at Parsons, Kansas.
- Kantrowitz-Donaldson diffuser.** See: **diffuser, Kantrowitz-Donaldson**.
- Katusha.** A type of Russian multiple rocket launcher used in WW II, operating either from fixed or mobile installations.
- K-band.** A radio-frequency band of 11,000 to 33,000 megacycles with wave lengths of from 2.73 to 0.91 centimeters, respectively. *Obsolescent.* See: **frequency, electronic**.
- kc (abbr).** 'Kilocycle(s).'
- kcs (abbr).** 'Kilocycles per second.'
- K damage.** See: **damage categories**.
- keeper.** 1. A dowel or pin used to keep piston rings from moving out of a fixed position. 2. Loop that holds straps or cords together. **Keepers are used** on gun slings, etc.
- Kelvin scale. (K)** A temperature scale that uses centigrade degrees, but makes the zero degree signify absolute zero.
In this scale, water freezes at plus 273.16 degrees and boils at 373.16 degrees.
This scale is named after the first Baron Kelvin (1824-1907), English mathematical physicist and inventor.
- KEROSINE.** A refined medium petroleum distillate used as an illuminant in lamps and as fuel in stoves and in some types of internal combustion engines.*
- key.** 1. **Cartridge actuated devices.** Small mechanical component in a CAD mechanism which acts as a restraint to limit the direction of motion of a component. 2. **Electronic computers.** A group of characters usually forming a field, utilized in the identification or location of an item; a marked lever manually operated for copying a character, e.g., typewriter, paper tape perforator, card punch manual keyboard, digitizer or manual word generator.
- keyholing.** Tumbling of bullet in flight usually caused by failure of the bullet to receive sufficient spin from the rifling in the barrel.
- KEY, MACHINE.** An item of solid metal, usually square or rectangular in cross section, usually longer in relation to its width and thickness, with or without a head, designed to fit into a slot on an axle or shaft, and into a mating slot in a hub or boss of a wheel, gear, pulley.*
- Keystone Ordnance Works.** Ordnance Corps field installation, located at Meadville, Pennsylvania. A sub-installation of Ravenna Arsenal.
- KEY, WOODRUFF.** An item in the form of a segment of a disk, which may have a flat bottom, with or without projecting shoulders, designed to fit into a keyway in an axle or shaft, and into a matching slot in the hub or boss of a wheel, gear or pulley.*
- K-gun.** A type of Navy gun in the shape of a 'K' for firing depth charges on arbors.
- kick.** 1. Violent backward movement of a gun after being fired, caused by the rearward force of the propellant gases acting on the gun. 2. Move backwards under the force of a propelling explosion. In both meanings, also called 'recoil.'
- kill.** 1. A term used alternatively with K damage, destructive damage. See: **damage categories**. 2. To cause a person or animal to die. 3. To destroy an aircraft or other vehicle.
- kiloton.** The explosive power of 1000 tons of TNT. Cf: **megaton**.
- kinetic energy ammunition.** Ammunition designed to inflict damage to fortifications, armored vehicles or ships by reason of the kinetic energy of the missile upon impact. The damage may consist of shattering, spalling or piercing. The missile may be solid, or may contain an explosive charge, intended to function after penetration. Cf: **chemical energy ammunition**.
- kinetic lead.** The correction or allowance made for the relative motion of a target when computing the lead angle in gunnery. Cf: **ballistic lead**.
- KINGPIN, FIFTH WHEEL.** A metal item designed for mounting to a fifth wheel coupler or fifth wheel upper plate to provide a towing and pivot connection between a truck-tractor or dolly and the semitrailer.*

KINGPIN, STEERING KNUCKLE. A hardened metal pin, with or without a head, designed to connect the wheel spindle to the front axle to permit vehicular steering. May be grooved, slotted or threaded to accommodate a locking device and drilled or grooved for lubrication.*

Kingsbury Ordnance Plant. Ordnance Corps field installation, located at Laporte, Indiana.

K, internal. The ratio of propellant surface which must discharge past any constricted region to the area at that region, at the most restricted portion of a rocket motor.

Kirkwood-Brinkley's theory. In terminal ballistics, a theory formulating the scaling laws from which the effect of blast at high altitudes may be inferred, based upon observed results at ground level. See: **Sach's theory.**

KI starch paper test. Test applied to check the stability of nitrocellulose, a sample of which is heated to 65.5°C in a glass tube in which is placed a piece of paper impregnated with potassium iodide and starch. The stability is measured by the length of time required for the products of decomposition to discolor the test paper. Specifications require that the paper shall not be discolored in less than 35 minutes.

kit bag. A closed baglike container, to be carried as a piece of luggage, designed to hold a group of related special purpose items.*

kit case. A caselike container, to be carried as a piece of luggage, especially designed to hold a group of related special purpose items.*

KITE, ANTENNA. An item consisting of one or more plane or winglike surfaces, which derives its lifting power from the inclination of its axis to the wind, and which is used to hoist and hold aloft an antenna.*

kit, maintenance. See: **MAINTENANCE KIT, ELECTRONIC EQUIPMENT.***

kit, modification, guided missile launcher. See: **MODIFICATION KIT, GUIDED MISSILE LAUNCHER.***

kit, rocket conditioning. See: **CONDITIONING KIT, ROCKET.***

KK damage. See: **damage categories.**

klystron. A vacuum tube for converting direct-current energy into radio-frequency energy by alternately slowing down and speeding up an electron beam, utilizing the transit time between two points to produce a velocity-modulated electron stream to deliver radio-frequency power to a cavity resonator. The term is applicable to an ultra-high-frequency amplifier, or generator, that combines the velocity-modulation principle with one or more cavity resonators to produce and/or utilize a velocity-modulated beam of electrons.

KNOB. An item of various shapes designed to be gripped by the fingers to transmit motion to other devices. May include detachable or nondetachable shaft, stud, pointer, or skirt. It may have reference markings in the form of dots, arrows, hairlines, and/or symbols which may be used in conjunction with a calibrated panel, vernier indicator, and the like to indicate the position or motion of items such as switches, valves, variable capacitors and the like. For items having a maximum diameter of three inches or more, excluding skirt and for all items, regardless of size, having spoked or simulated spoked construction, see: **HANDWHEEL.***

knock. A detonation (which see, sense 2).

knot. A nautical mile per hour, i.e., 1.1516 statute miles or 6,080 feet per hour.

known datum point. A clearly visible point, to which the azimuth and range are known.

known-distance firing. Practice firing when the distance between the weapon and the target is known.

knuckle pin. See: **KINGPIN, STEERING KNUCKLE.**

knuckle post. *Automotive.* The vertical arm or post of the steering knuckle on which the knuckle is pivoted.

kopfring. A metal ring which is attached to the nose of a bomb to reduce its penetration in earth or water.

KT (abbr). 'Kiloton.'

K transfer. In artillery ground fire, the shift of fire from one point to another in the transfer limits of the piece, the actual range being corrected by application of the K. See: **K.**

KUD-1. A kind of remote-controlled glide bomb, popularly called the 'Gargoyle.'

L

L (*abbr.*). Chemical agent, 'lewisite' (war gas).

LA (*abbr.*). 'Low altitude.'

labeled cargo. Cargo of a dangerous nature, such as explosives, flammable or corrosive liquids, and the like, which is designated by different colored labels to indicate the requirements for special handling and storage. Examples of such colored labels are:

label, green. A label required on shipments of nonflammable gases.

label, red. A label required on shipment of articles of a flammable nature.

label, white. A label required on shipments of acids or corrosive liquids.

label, yellow. A label required on shipments of flammable solids and oxidizing materials.

laboratory notebook. Notebook to be kept by engineers, scientific and laboratory personnel for the purpose of recording by dates the projects undertaken, work performed, and results achieved. All entries should be dated, signed and witnessed in such manner that the notebook serves not only as a technical record but also as a useful legal document for establishing the dates of conceptions, inventions, etc., in connection with patent claims.

LACQUER. A clear or pigmented liquid coating composition which, when applied in a thin layer, sets and dries rapidly to form a solid film chiefly by evaporation of the solvent portion of the vehicle. It is composed basically of a cellulose derivative and/or a blend of resins such as vinyl, acrylic, polystyrene, and the like, mixed in a solvent, with or without the addition of plasticizers. Excludes all items that are mechanically strippable.*

lacrimator. A chemical agent of the tear gas type. See: tear gas.

LaCrosse. Name applied to an Army surface-to-surface guided missile used by ground forces for attack of enemy strong points, such as pill boxes. Employs solid fuel and command guidance.

LADDER, ROTATING, AERIAL. A ladder with an adjustable metal base attached thereto, designed to be mounted on a motor truck or trailer. It is adjustable to various angles of inclination and rotation and is used for overhead installation and maintenance work.*

Lake City Arsenal. Ordnance Corps field installation, located at Independence, Missouri.

Laminac. A proprietary polyester resin containing styrene, which becomes self-hardening when a suitable catalyst is added. Used as an adhesive and binding agent.

laminar boundary layer. A boundary layer characterized by laminar flow.

laminar flow. A nonturbulent airflow over or about an airfoil or other body, made up of thin parallel layers.

LAMMP (*abbr.*). 'Lower acceptable mean maximum pressure.'

lamp unit. A sealed item containing a light source and one or more of the following: reflector, lens, shade and/or mask. It is designed to be a replacement unit for a specific type light. Use application type modifier such as stop light.*

lamp, vehicle. Lighting device mounted on a vehicle. Types include:

backing: A lighting unit mounted on rear end of vehicle and intended to illuminate road to rear.

dome: An interior lighting unit mounted in top of vehicle.

head: A lighting unit on front of vehicle intended primarily to illuminate road ahead of vehicle.

hood: A lighting unit mounted under hood of vehicle to illuminate engine compartment.

inspection: A portable lighting unit connected by extension cord to lighting system of vehicle.

instrument: A lighting unit mounted on instrument board and intended to illuminate instruments.

panel: A lighting unit mounted either in rear panel or in corners of closed vehicle.

side: A lighting unit mounted on either side of vehicle and intended primarily as a marker to indicate location of vehicle. Side lamps cover types generally known as bullet, cowl, fender or parking, pillar or wind-shield lamps.

spot: A lighting unit, mounted on a manually operated adjustable bracket, which has one focusing-type reflector and one focusing-type light source.

step: A lighting unit mounted on exterior of vehicle and intended primarily to illuminate step or running board.

tail: A lighting unit used to indicate rear end of vehicle by means of a ruby sight.

land. 1. *Firearms.* One of the raised ridges in the bore of a rifled gun barrel. See: rifling. 2. *Electroacoustics.* The record surface between two adjacent grooves of a mechanical recording.

landing craft. Craft which is especially designed for beaching, unloading or loading on the beach, and retracting.

LANDING CRAFT, MECHANIZED. A twin-propeller, steel landing craft, with a ramp bow, designed to land military equipment, such as trucks, trailers, and tanks directly on the beach, and to retract under its own power.*

limited standard type. See: *type classification*.

limited traverse. Restricted movement of a gun to right or left. The restriction may be caused by mechanical devices or by natural obstacles.

limited traverse emplacement. Emplacement for a gun that permits the gun only a restricted movement to right or left.

limiter. *Electronics.* A circuit which limits the maximum positive or negative values of a wave form to some predetermined amount. It is used in frequency modulation systems to eliminate unwanted variations of amplitude in received waves.

limiting. The action performed upon a signal by a limiter.

limiting velocity. See: *terminal velocity* (sense 1).

limit of fire. 1. Any angular limit, established for safety purposes, for firing at a towed aerial target.
2. The boundary of an area within which gunfire is placed.

limits. In dimensioning, the maximum and minimum values prescribed for a specific dimension. The limits may be of size if the dimension concerned is a size dimension, or they may be of location if the dimension concerned is a location dimension.

limit stop. An arm or part used to limit angular motion, as of a gun turret.

limit velocity. *Armor and projectile testing.* Lowest possible velocity at which any one of the complete penetrations is obtained. Since the limit velocity is difficult to obtain, a more easily obtainable value, designated as the ballistic limit, is usually employed.

linear. 1. Pertaining to or of the nature of a line. 2. A linear relationship exists between two quantities when the change in one quantity is exactly proportional to the change in the other quantity.

linear acceleration. Acceleration in a straight line; *specif.*, acceleration along the longitudinal axis of a projectile, missile or aircraft.

linear burning rate. The distance normal to any burning surface of the propellant grain burned through in unit time.

linear charge. See: *charge, linear*.

linear scan. A radar scan projected and fixed in a straight line, used esp. in sector scanning to increase the intensity of the echoes.

linear speed method. Method of calculating firing data in which the future position of a moving target is determined by finding the direction of flight and the ground speed of the target. By multiplying the ground speed by the time of flight of the projectile, the future position is determined. See: *angular travel method*.

linear velocity. Velocity in a straight line.

line charge. See: *charge, line*.

line item. See: *requisition line item*.

line of aim. A line from a person's eye, as that of a gunner or bombardier, through a sight, along which aim is taken.

The line of aim may or may not be directed at the target; in allowing for lead with fixed sights, for

example, the line of aim is ahead of the target. Cf: *line of sight* (sense 1).

line of collimation. Line which passes through the optical center of the objective lens of the instrument and the point of reference at the point of principal focus.

line of departure. (LD) 1. The direction of a projectile at the instant it clears the muzzle of the gun.
2. The direction of a bomb or rocket at the instant of launching.

In sense 1, the line of departure may be coincident with the gunbore line, or, in the case of an aircraft-mounted gun, it may be the resultant of the aircraft velocity vector and the muzzle velocity vector.

line of elevation. The prolongation of the bore when the piece is set to fire.

line of fall. Line tangent to the trajectory at the level point.

line of fire. The flight path or paths followed by projectiles fired from a weapon or group of weapons.

line of flight. The line of movement, or the intended line of movement, of an aircraft, guided missile, projectile, or the like in the air.

The line of flight may or may not be coincident with, or parallel to, the longitudinal axis of the aircraft, projectile, etc.

line of impact. Line tangent to the trajectory at the point of impact.

line of observation. Line from a position finder to a target at the exact time of a recorded observation.

line of position. The straight line connecting the point of origin with the point of position.

The point of origin is usually the gun or a position-finding instrument. Thus, corresponding to the three positions of the target, there are the line of position at observation, the line of present position, and the line of future position. Cf: *line of site*.

line of sight. 1. Line of vision; optical axis of an observation instrument; the straight line between an observer's eye and a target or other observed object or spot, along which sight is taken. Cf: *line of aim*; *line of site*. 2. The straight line from a transmitting radar antenna in the direction of the beam, esp. toward a target.

line of site. Straight line between the origin of the trajectory and the target. Cf: *line of sight*. Sometimes also called *line of position*.

liner. 1. Inner tube, in a cannon, which bears the rifling and which may be replaced when worn out. 2. Detachable plastic or fiber inner layer of a metal helmet; helmet liner. 3. Metal inner box usually with soldered or welded seams, designed as an inside container for placing within a sturdily constructed exterior container for protection of ammunition or explosives against deterioration. 4. Cone of material used as an integral part of shaped charges; a shaped charge liner. See also: *charge, shaped*.

liner assembly. Pertaining to shaped charge ammunition: A liner (sense 4) plus the parts immediately attached, all functioning as a unit. These can be liner with spitback tube, plus cap or cup.

liner collapse. The collapse of the liner of a shaped charge into jet and slug as a result of detonation. See: jet; liner (sense 4); slug.

liner, conic. A shaped charge liner of conical shape. See: liner (sense 2).

liner, fuze cavity. A thin-walled lining in the fuze cavity of a bursting charge.

line throwing cartridge. See: CARTRIDGE, CALIBER .32 LINE THROWING; CARTRIDGE, CALIBER .45 LINE THROWING.

LINE THROWING DEVICE. An item which fires or launches a line carrying projectile. May include applicable equipment such as projectiles and lines.*

line throwing gun. Gun which propels a metal rod with attached line from one vessel to another or from vessel to pier, enabling the subsequent passage of larger lines for securing or passing equipment.

line throwing projectile. See: PROJECTILE, LINE THROWING GUN.

LINK, CARTRIDGE. A unit part of a belt, link (which see) by means of which ammunition is fed into automatic weapons.

link chute adapter. A unit attached to a gun to allow a link ejection chute to be fastened to the gun, and to lead ejected links to the chute.

linked ammunition. Cartridges fastened to one another side by side with metal links, forming a belt, link (which see) for ready feed to a machine gun.

link ejection chute. A chute or passage attached to a machine gun, through which links are thrown or conveyed to a desired point after being separated from the cartridges. Such a chute may be either fixed or flexible. See also: CHUTE, EJECTION.

link, end. See: LINK, CARTRIDGE.

LINKER-DELINKER, 20 MILLIMETER, HAND. A machine designed to assemble or disassemble metallic disintegrating linked belt for rapid fire 20 millimeter ammunition.*

LINKER-DELINKER, 20 MILLIMETER, POWERED. A device designed to power link or delink 20 millimeter ammunition pertaining to short range antiaircraft guns.*

LINKER, 20 MILLIMETER, POWERED. A device specifically designed to power link 20 millimeter ammunition.*

LINK FILLER, CARTRIDGE. A filler piece for linked ammunition, used to prevent the trailing loop from catching when leaving the feed system.

link-loading machine. Machine that quickly loads ammunition into interlocking metal links, which in turn form an ammunition belt for certain types of automatic weapons.

LINK, RELEASE, FLOAT. An item designed to contain an explosive charge and to connect a float to a switch box submerged under water. The float surfaces when the link is ruptured by the explosive charge to provide a means of locating the switch box.*

link stretch. The change in the center to center distance of the individual rounds of belted ammunition as the load is applied.

liquid cooled engine. An engine having a water jacket around the valve ports, combustion chamber, and cylinders, and a radiator for dissipating the heat from the cooling liquid into the surrounding air. As a rule, liquid cooled engines use a pump for circulating the cooling liquid.

liquid cooling. Liquid cooling system of an engine. Provides for the circulation of liquid through the cylinder block to pick up the waste heat energy. The liquid itself, usually water or a special liquid such as ethylene glycol, heated in this process, rises through the outlet hose on the cylinder head into the tank on the top of the radiator, then flows downward through the radiator where it is cooled by air.

liquid propellant. A propellant in a liquid state, as distinguished from a solid propellant. May be classified as monopropellant, bipropellant, and sometimes multipropellant. Used in rocket engines. See also: bipropellant; monopropellant; multipropellant; ROCKET ENGINE; solid propellant.

liquid rocket. See: rocket, liquid.

Little David. Experimental mortar of 36-inch diameter developed during WW II. This mortar and its special ammunition were secretly developed in case they should be required in reducing German fortifications, however, the reduction of these proved to be unnecessary.

Little John. Name applied to an Army rocket system (318 mm) consisting of a surface-to-surface tactical missile, similar to, but smaller than, Honest John, which see. Employs solid fuel.

live ammunition. Ammunition containing explosives or active chemicals as distinguished from inert or drill ammunition.

LMG (abbr). 'Light machine gun.'

L network. A network composed of two branches in series, the free ends being connected to one pair of terminals, and junction point and one free end being connected to another pair of terminals.

LO (abbr). 'Lubrication order.'

load. 1. See: charge. 2. The force or pressure exerted upon an object, under static or dynamic conditions, either by virtue of its own weight or by some imposed object or force. 3. That which is placed upon a vehicle or person for conveyance, or that which is held up or sustained. 4. Short for 'payload' or 'useful load.' 5. A basic load of ammunition. 6. The power carried by an electric circuit; the impedance to which energy is being supplied. 7. Inertia forces and frictional restraints to motion experienced by the stroking member of a cartridge actuated device. 8. To place ammunition in a gun, bombs on an airplane, explosives in a missile, fuel in a fuel tank, cargo or passengers into a vehicle, and the like.

load, design. *Stress analysis.* A specified load below which a structural member or part should not fail. It is the probable maximum applied load multiplied by the factor of safety. Also, in many cases, an appropriate basic load multiplied by a design-load factor.

loaded impedance. *Electroacoustics.* Of a transducer: The impedance at the input of the transducer when the output is connected to its normal load.

loader. Mechanical device which loads guns with cartridges. See also: **LOADER-RAMMER, POWERED.**

LOADER-RAMMER, POWERED. A device specifically designed to automatically load and ram rounds of ammunition into a gun chamber at high speed. It may also include a fuze setter.*

load factor. *Stress analysis.* The ratio of two loads (the second being a basic load) that have the same relative distribution. The first load may be the load applied during some special maneuver, the maximum probable load on the airplane or part, the design load, or the ultimate load.

load, full. Weight empty plus useful load; also called gross weight.

loading angle. Angle of elevation specified for loading a particular weapon with its ammunition.

loading density. A term applied specifically to explosive charges of projectiles, bombs, warheads, etc. The quantity of explosive per unit volume, usually expressed as grams per cubic centimeter. Cf: **density of loading.**

loading, power. The gross weight of an airplane divided by the rated horsepower of the engine computed for air of standard density, unless otherwise stated.

loading tray. 1. Trough-shaped carrier on which heavy projectiles are placed so that they can be more easily and safely slipped into the breech of a gun. 2. Hollowed slide which guides the projectiles into the breech of some types of automatic weapons.

loading, unsymmetrical. *Stress analysis.* A design loading condition for the wings and connecting members representing the conditions as in a roll (which see).

loading, wing. The gross weight of an airplane divided by the wing area.

load, thrust. See: **thrust load.**

load, towed. The weight of the gun, carriage, trailer, or other equipment towed by a prime mover.

load, ultimate. *Stress analysis.* The load that causes destructive failure in a member during a strength test, or the load that, according to computations, should cause destructive failure in the member.

load, working. *Stress analysis.* The maximum load applied to a material, or occurring under ordinary working conditions.

lobe. Any rounded and elongated pattern or object; *specif.*, the pattern of electromagnetic waves radiated esp. by a radar antenna.

lobe, side. A portion of the radiation from an antenna outside the main beam and usually of much smaller intensity; a region between two minima in the pattern.

local oscillator. *Receivers.* An oscillator whose output is mixed with a wave for frequency conversion.

local procurement. 1. Procurement of supplies or equip-

ment in the continental United States by other than a centralized purchasing office, such as purchase by an installation of supplies and equipment for use of that installation. 2. Procurement of supplies or equipment for its own use in an area outside the United States by a United States military command located in that area.

location dimension. Dimension which specifies the position or distance relationship of one feature of an object with respect to another.

lock. 1. Position of a safety mechanism which prevents a weapon from being fired. 2. Fastening device used to secure against accidental movement, as on a control surface. 3. To secure or make safe, as to set the safety on a weapon. 4. To lock on, to fasten onto and automatically follow by means of a radar beam. Said of a radar set or antenna.

locked rotor torque. See: **rotor torque, locked.**

lock frame. Mechanical unit in certain firearms. It is used to assist in unlocking the bolt from the barrel after recoil has started.

LOCKING CUP ASSEMBLY, BOMB. A group of metallic items designed to hold an **ADAPTER, CLUSTER, BOMB** in a closed position.*

locking lugs. Metal projections on the bolt of a small arms weapon which cam into recesses cut in the side of the receiver to lock the weapon prior to firing.

LOCKING WEB, BOMB FIN. A metallic item designed to prevent rotation of a **FIN ASSEMBLY, BOMB** in relation to the bomb.*

lock mechanism, final. Device for locking stroking member of a cartridge actuated device in final position.

lock mechanism, initial. Device for preventing inadvertent motion of stroking member in a cartridge actuated device prior to firing.

loft bombing. A method of aerial bombing in which the delivery plane approaches the target at a very low altitude, makes a definite pull up at a given point, releases bomb at predetermined point during the pull up and tosses the missile on the target.

log (abbr). 'Logistics.'

logarithmic computer. A part of an electronic computing system that resolves problems in terms of logarithmic values, or as a logarithmic function.

The logarithmic computer is a part of such electronic computers as Eniac, and is used in the complicated calculations of gunnery.

logarithmic range scale. Type of scale used on the range disks of guns when the disks are graduated for the combination of propelling charge and projectile. It is so named because it follows a logarithmic rather than an arithmetic curve.

logic. *Electronic computers.* The science that deals with the canons and criteria of validity in thought and demonstration; the science of the formal principles of reasoning; the basic principles and applications of truth tables, gating, interconnection, etc., required for arithmetical computation in a computer.

logistics. (log) In its most comprehensive sense, those aspects of military operations that deal with: (1) Design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel; (2) movement, evacuation, and hospitalization of personnel; (3) acquisition or construction, maintenance, operation, and disposition of facilities; and (4) acquisition or furnishing of services. It comprises both planning, including determination of requirements, and implementation.

Lone Star Ordnance Plant. Ordnance Corps field installation, located at Texarkana, Texas.

long delay fuze. See: fuze, long delay.

longeron. Any relatively heavy longitudinal structural member in an airplane fuselage or nacelle, or in a similar aerodynamically designed body, usually running continuously across a number of formers.

A longeron may be either of wood or metal, and is distinguished from a stringer (which see).

Lonehorn Ordnance Works. Ordnance Corps field installation, located at Marshall, Texas.

longitudinal acceleration. See: acceleration, longitudinal.

longitudinal deviation. See: range deviation.

longitudinal stability. See: stability, longitudinal.

longitudinal stress. See: stress, circumferential.

long-life items. Items which have an estimated average service life of 5 years or more.

long-range radar. Equipment whose maximum range on a reflecting target of one square meter normal to the signal path exceeds 300 miles but is less than 800 miles, provided line of sight exists between the target and the radar. See: very long-range radar.

long recoil. See: recoil-operated.

Loon. The U. S. Navy designation for the JB-2, American version of the German V-1 flying bomb.

loop. 1. A flight maneuver in which an airplane flies a circular path in an approximately vertical plane, with the lateral axis of the airplane remaining horizontal; *specif.*, an inside loop. 2. To make a loop.

loose ammunition. *Obsolescent* term. Usual form of ammunition for old muzzle-loading arms in which loose powder and the ball or projectile were individually loaded through the muzzle.

loose liner. A liner (sense 1), made to such dimensions that when assembled in the gun, there is a small but definite clearance between the outside surface of the liner and the inside surface of the tube. Made with a slight taper to facilitate its assembly and removal.

loose round. Defective cartridge in which the bullet is loose in the cartridge case.

loran (*abbr.*). 'Long-range navigation.'

Los Angeles Ordnance District. (LAOD) One of the eleven districts into which the United States is divided for purposes of industrial mobilization, procurement, contract negotiation and administration, etc., by the Ordnance Corps. Embraces the counties of San Luis Obispo, Kern, and San Bernardino, and all counties south thereof in California; the counties

of Clark, Lincoln, Esmeralda, and Nye in Nevada; the States of Utah, Arizona, and New Mexico; and the counties of El Paso, Hudspeth, Culberson, Jeff Davis, Presidio, and Brewster in the State of Texas. The main office is located in Los Angeles, Calif.

lost. Term used by an observer to indicate that rounds fired by a gun or mortar were not observed.

lost motion. Motion of a mechanical part which is not transmitted to connected or related parts. It is the cumulative result of backlash and end play.

lot. Quantity of material, such as propellant, the units of which were manufactured under identical conditions. A lot is not ordinarily made up of identical units, in fact, the units will only rarely be identical. To minimize the effect of this, the units composing a lot are sometimes deliberately and thoroughly mixed. This is always done in the case of propellant lots. It is called 'blending.' A lot in which the units are so thoroughly mixed that all portions are essentially alike is called a 'homogenous lot.' See also: ammunition lot; blending.

lot-by-lot sampling. *Inspection.* Sampling by which a predetermined number of units are selected from a lot in a manner such that the quality of the sample will represent as accurately as possible the quality of the lot.

lot, grand. A designated combination of a number of lots, each of which is expected to give the same level of quality and performance. The lots are selected on the basis of being made by the same manufacturer, either consecutively or at nearly the same time under the same conditions and from nearly identical components or raw materials.

lot number. Identification number assigned to a particular quantity or lot of materiel, such as ammunition, from a single manufacturer. For an example, see: ammunition lot number.

lot, reference. A lot of select ammunition components or cartridges assembled with such components; used as a standard.

loudspeaker. An item designed to convert audio frequency electrical energy into acoustic energy which it projects over a distance. It may include one or more drivers, horns, attenuators or transformers. It may be cased or include mounting.*

LOUDSPEAKER, CRYSTAL. A loudspeaker whose diaphragm movements are produced by the piezoelectric element through which audio frequency current is flowing.*

LOUDSPEAKER, ELECTROMAGNETIC. A loudspeaker whose diaphragm movements are produced by a coil or iron armature moving in the field of an electromagnet or fixed coil.*

loudspeaker, magnetostriction. *Electroacoustics.* A loudspeaker in which the mechanical displacement is derived from the deformation of a material having magnetostrictive properties.

loudspeaker, moving coil. *Electroacoustics.* A moving-conductor loudspeaker in which the moving conductor is in the form of a coil conductively connected to the source of electric energy.

loudspeaker, moving conductor. *Electroacoustics.* A loudspeaker in which the mechanical forces result from magnetic reactions between the field of the current in a moving conductor and a steady magnetic field.

LOUDSPEAKER, PERMANENT MAGNET. A loudspeaker whose diaphragm movements are produced by a coil or iron armature moving in the field of a permanent magnet.*

Louisiana Ordnance Plant. Ordnance Corps field installation, located at Shreveport, Louisiana.

louver. Also *louvre.* A slotted opening or slit in a cowling, fuselage, hood, or the like, for the passage of cooling air or for ventilation.

low-altitude bombing. Horizontal bombing with the height of release at an altitude between 900 and 8,000 feet.

low-angle bombing. Bombing from an airplane at a slight dive angle.

Although low-angle bombing is sometimes distinguished from dive bombing, it is actually a species of dive bombing.

low-angle fire. Gunfire delivered at angles of elevation below the elevation that corresponds to the maximum range of the piece, so that ranges increase with increases in angles of elevation. Cf: **high-angle fire.**

low drag. Designed for low air resistance, as bombs for use on supersonic planes.

low acceptable mean maximum pressure. (LAMMP) See: **pressures, gun.**

low explosive. (LE) An explosive which when used in its normal manner deflagrates or burns rather than detonates; that is, the rate of advance of the reaction zone into the unreacted material is less than the velocity of sound in the unreacted material. Low explosives include propellants, certain primer mixtures, black powder, photoflash powders and delay compositions. Whether an explosive reacts as a **high explosive** (which see) or a low explosive depends on the manner in which it is initiated and confined. For example, a double base propellant when initiated in the usual manner is a low explosive. However, this material can be made to detonate if the propellant is initiated by an intense shock. Conversely, a high explosive like TNT, under certain conditions, can be ignited by flame and will burn without detonating.

low frequency. (LF) See: **frequency, electronic.**

low-level bombing. Bombing from any altitude considered relatively low. Low-level bombing is not distinguished from minimum-altitude bombing. Cf: **low-altitude bombing.**

low order burst. Functioning of a projectile or bomb in which the explosive fails to attain a high order detonation. Usually evidenced by the breaking of the container into a few large fragments instead of a large number of smaller fragments. See also: **detonation.**

low order detonation. See: **detonation.**

low-pressure area. *Bearing lubrication.* The point in a bearing where the pressure is the least and the area or space for a lubricant is the greatest; the point at which it is usually most desirable to introduce a lubricant into a bearing.

In every bearing there are high- and low-pressure areas which are the result of the lubricant's wedging action as it forms and maintains a protective film due to journal motion. If an attempt is made to introduce the oil into the bearing at the high-pressure point, the pressure of the oil film wedge will force the oil back out of the bearing. This, in turn, will result in a failure of the lubricating film.

low velocity. *Specif.* Muzzle velocity of an artillery projectile of 2,499 feet per second or less.

LOX. 'Liquid oxygen'; used as an oxidizer in certain liquid propellant mixtures.

LOZ. 'Liquid ozone'; used as an oxidizer in certain liquid propellant mixtures.

LPT (abbr). 'Low pressure test.'

lubricant. That which lubricates. *Specif.* A substance possessing such properties that it will, when interposed between moving parts of machinery, make the surface slippery and reduce friction, eliminate asperities, and prevent cohesion between the lubricated surfaces.

LUBRICANT, TIRE AND RIM. A soap type lubricant designed to reduce friction and prevent cohesion in the mounting or dismounting of pneumatic tires. It may contain additives, such as inhibitors, accelerators, and the like, but is not resistant to high temperatures.*

LUBRICATING AND SERVICING UNIT, POWER OPERATED. A self-contained maintenance unit. Usually consists of a lubricant storage tank and/or drums with air or electrically operated pump(s) designed for high pressure application of lubricant to machinery in the field. May include transporting vehicle.*

LUBRICATING OIL, COLLOIDAL GRAPHITE. A colloidal graphite dispersed in a refined petroleum oil, silicone fluid, or castor oil. See also: **GRAPHITE, COLLOIDAL.***

LUBRICATING OIL, COMPOUNDED. A petroleum product compounded with various fatty materials. It is generally used for lubrication under conditions involving condensed steam or humid air.*

LUBRICATING OIL, GEAR. A petroleum or synthetic product with load-carrying properties, especially prepared for lubrication of various type gears, such as worm gears, spiral bevel type gears, hypoid gears, transmissions or the like.*

LUBRICATING OIL, GENERAL PURPOSE. A refined mineral oil, with or without additives, suitable for applications which require other than special lubricants. Commonly used for household uses, machinery, general squirt can application, or the like. May have especially added preservative qualities. When prepared for specific special purpose, see specific item name.*

LUBRICATING OIL, INSTRUMENT. An oil primarily prepared for lubrication of aircraft instruments, gyro instruments, electronic equipment, gyros in torpedoes and aerial bombs, and calibrating and measuring instruments.*

LUBRICATING OIL, INTERNAL COMBUSTION ENGINE. A petroleum oil, a synthetically prepared product, or a combination thereof, prepared primarily for lubrication in crankcases of internal combustion engines. It usually contains additives for corrosion prevention and oxidation prevention, and may contain detergents. See also: **LUBRICATING OIL, GENERAL PURPOSE.**

LUBRICATING OIL, WATCH. A nonspreading, non-gumming, noncorrosive oil prepared for lubrication of jewel and steel bearings in timepieces.*

LUBRICATING OIL, WEAPONS. A petroleum and/or synthetic oil with antioxidation and noncorrosion characteristics, principally prepared for the lubrication of aircraft weapons.*

lubrication. The act of applying petroleum products for the lubrication, actuation, and preservation of various machines. A film of lubricant is provided between all rubbing, moving, and bearing surfaces in order to prevent undue friction and wear on these surfaces.

lubrication action. The ability of the lubricant: (1) to make a surface slippery, (2) to adhere to the surface, and (3) to maintain a film between rubbing surfaces.

lubrication, chassis. Lubrication of all parts of the vehicle other than the engine, transmission, rear axle (differential), clutch, and wheels.

LUG ASSEMBLY. Part of a rocket motor, when used as a jato unit, by which the motor is attached to the load. To be differentiated from the thrust structure.

LUG, SUSPENSION, BOMB. A steel forging with one or more mounting holes or with a threaded base for attachment to a bomb or **ADAPTER, CLUSTER, BOMB** to provide connecting means for suspension in the bomb station.*

LUG, SUSPENSION, UNDERWATER MINE. An item designed for attachment to an underwater mine to provide connecting means for suspension in the bomb station of an aircraft.*

LUMBER, HARDWOOD. Wood from the botanical group of trees that are broad-leaved. The modifier hardwood has no reference to the hardness of the wood. The product of the sawmill and planing mill, not further manufactured than by sawing, resawing and/or passing lengthwise through a standard planing machine.*

lumber, softwood. Wood from any of the coniferous trees of the United States, which are characterized by needle-like or scale-like leaves. The modifier "SOFTWOOD" has no reference to the softness of the wood. The product of the sawmill and planing mill, not further manufactured than by sawing, resawing and/or passing lengthwise through a standard planing machine.*

LUMBER, SOFTWOOD, SHOP. Softwood lumber presenting a surface containing blemishes and defects which can be removed by recutting to a specified minimum size and quality.*

lumiline screen. See: **chronograph.**

lunette. Towing ring in the trail plate or tongue of a towed vehicle, such as a gun carriage or trailer, used for attaching the towed vehicle to the prime mover or towing vehicle.

lung irritant. A chemical agent which attacks the respiratory passages. One of the family of 'choking gases.' See: **choking gas.**

Lupersol. A proprietary catalyst, used as the hardener in **Laminac** (which see).

lusterless paint. Paint which absorbs light rays so that no shine or polish appears on its surface. It is used extensively on Army vehicles.

LVT (abbr). 'Landing vehicle, tracked.'

LWB (abbr). 'Long wheelbase.'

lyddite. Picric acid (which see), a high explosive. Also called 'melinite.'

M

M (*abbr.*). 1. 'Mach number.' 2. In such usage as M19, designates a standardized item. Cf: T; X; A; E.

Mace. Name given to an Air Force surface-to-surface tactical missile, a successor to the *Matador* (which see).

mach. Also **Mach.** [Named for Ernst *Mach*, 1838-1916, Austrian physicist.] Frequently used for **mach number** (which see).

mach angle. The acute angle between a mach line and the line of flight of a moving body.

mach effect. A single effect, or a total effect, resulting from objects moving at transonic or supersonic speeds.

Mach effect may be considered in terms of: a. The changes in the air brought on by a shock wave, i.e., changes in pressure, velocity, density, and temperature. b. The fusion of shock waves in atomic explosions. c. The changes in the drag coefficient, lift coefficient, or movement coefficient of an aircraft or missile.

mach front. A **mach stem**.

machine gun. (MG) 1. A weapon that fires small arms ammunition automatically and is capable of sustained rapid fire. It can be belt- or link-fed, air- or water-cooled, recoiled or gas operated, and usually fired from a mount. Excludes CANNON (as modified) and RIFLE (as modified).* 2. To riddle a target with machine gun fire.

Several calibers of machine guns are given herein, with item name in each case.

MACHINE GUN, CALIBER .30.

MACHINE GUN, CALIBER .50.

MACHINE GUN, CALIBER .45, SUBMACHINE.

MACHINE GUN, 20 MILLIMETER, AUTOMATIC.

MACHINE GUN, 30 MILLIMETER, AUTOMATIC.

machine gun chronograph. See: **chronograph**.

machine pistol. 1. A pistol capable of full-automatic fire. 2. A **submachine gun** (which see).

The application of the term in sense 2 has been introduced since WW II, from the German and Russian words of the submachine gun, *Maschinenpistole* ('machine pistol') and *pistol'nyy-pulemyot* ('pistol-machine gun'), so called because the submachine gun ordinarily uses pistol-type ammunition.

mach line. A theoretical line representing the back-sweep of a cone-shaped shock wave made by an assumed infinitesimally small particle moving at the same speed and along the same flight path as that of an actual body or particle. Used in defining effects resulting from supersonic speeds.

This line, as represented on any plane bisecting

the shock-wave cone, forms an angle with the flight path usually somewhat more acute than the angle formed by the shock wave of the actual body, since the angle of the actual shock wave depends, among other things upon the shape of the body. A very weak shock wave forms an angle approximating the angle of the mach line.

MACHMETER. An instrument designed to indicate the ratio of true airspeed to the speed of sound.*

mach number. (M) The ratio of the velocity of a body to that of sound in the medium being considered. Thus, at sea level, in air at the U. S. Standard Atmosphere, a body moving at a mach number of one ($M=1$) would have a velocity of 1116.2 ft/sec (the speed of sound in air under those conditions). Term is frequently shortened to 'mach' or 'Mach.'

mach number, critical. The mach number at which sonic velocity is attained at some point on the airframe.

mach stem. A shock wave or front formed above the surface of the earth by the fusion of direct and reflected shock waves resulting from an airburst bomb. Also called 'mach wave' and 'mach front.'

mach wave. 1. A species of shock wave theoretically formed by an infinitesimally small particle moving at supersonic speed, the same as that of an actual body, which wave forms a mach angle with the line of flight of the body. 2. A mach stem resulting from an explosion.

In sense 1, the mach wave is represented by the **mach line** (which see).

macrometer. Instrument that has two mirrors and a focusing telescope with which the ranges of distant objects can be found.

MAERU (*abbr.*). 'Mobile Ammunition Evaluation and Reconditioning Unit.'

magazine. 1. A structure or compartment for storing ammunition or explosives. 2. That part of a gun or firearm that holds ammunition ready for chambering.

In sense 2, magazines for small arms may be detachable or nondetachable from the rest of the piece. A *box magazine* is a detachable magazine in the shape of a rectangular box; a *drum magazine* is a detachable magazine in the shape of a drum.

magazine area. Area specifically designed and set aside for the storage of explosives or ammunition.

magazine, gun. See: **CLIP, CARTRIDGE**.

magazine, pistol. See: **CLIP, CARTRIDGE**.

magazine, rifle. See: **CLIP, CARTRIDGE**.

magic tee. A particular radar waveguide configuration, so called because its physical aspect resembles a double letter 'T.' The use of this configuration

permits the coupling of a radar transmitter and receiver to a common antenna without the use of an anti-transmit-receive box.

Magnaflex. Proprietary name for a test and the equipment used for inspecting steel parts for structural imperfections. The test involves inspection for breaks or distortions of the magnetic flux lines after passing the part through a magnetic field.

magnesium bomb. See: bomb, magnesium.

magnetic azimuth. Azimuth measured from magnetic north.

magnetic bearing. The angle in the horizontal plane between the direction of magnetic north and a line joining the observer and the object, usually measured clockwise.

magnetic biasing. *Electroacoustics.* The simultaneous conditioning of the magnetic recording medium during recording by superposing an additional magnetic field upon the signal magnetic field.
In general magnetic biasing is used to obtain a substantially linear relationship between the amplitude of the signal and the remanent flux density in the recording medium.

magnetic brake. A braking system for a vehicle in which the brake is held in the off position magnetically, i.e., through use of energized solenoids. Used as a breakaway safety in towed vehicles, since loss of the energy source, coming from the tractor vehicle, will result in immediate application of the brake.

magnetic charge. See: grenade, magnetic.

magnetic course. Direction of movement or flight as measured by the angle between the line to magnetic north and the line of motion.

magnetic declination. See: declination.

magnetic deviation. As opposed to magnetic declination, amount of compass error for given deduction on any one azimuthal reading.

MAGNETIC DRUM, DATA STORAGE. An electromechanical item which accepts and systematically retains digital input data in such a manner as to facilitate the rapid recovery of the stored information. The item consists of a drum-like structure the surface of which is coated with a material susceptible to spot magnetization, integral wiring, a drive motor and its mechanical linkage, and data translating heads for impressing on or removing from the drum surface data in digital form. The item is a component of an electronic computer. See also: CORE MEMORY UNIT.*

magnetic field. 1. Any space or region in which magnetic forces are present, as in the earth's magnetic field, or in or about a piece of magnetized steel, or in or about an electrical current. 2. The magnetic forces present in such a space or region.

magnetic hardness comparator. A device for checking the hardness of steel parts by placing a unit of known proper hardness within an induction coil. The unit to be tested is then placed within a similar induction coil, and the behavior of the induction coils compared. If the standard and test units have the same

magnetic properties, the hardness of the two units is considered to be the same.

magnetic head. *Electroacoustics.* A transducer for converting electric variations for storage on magnetic media, for reconverting energy so stored into electric energy or for erasing such stored energy.

magnetic heading. The angle in the horizontal plane between the direction of magnetic north and the line along which the vehicle is pointing, usually measured clockwise.

MAGNETIC INSPECTION OIL. A light petroleum oil, such as kerosine or naphtha, to which has been added fine ferromagnetic particles to form an inspection penetrant. The ferrous particles are usually colored black or red for contrast. When the penetrant is applied to a metal surface being inspected by means of a magnetic inspection machine, the ferrous particles accumulate in any surface cracks by magnetic attraction, thereby permitting the cracks to be readily discernible. If the ferrous particles are fluorescent, surface cracks will be brilliantly illuminated under black light. See also: INSPECTION PENETRANT.*

MAGNETIC INSPECTION PASTE. A paste containing ferromagnetic particles designed to be added to a light distilled petroleum oil, such as kerosine or naphtha, to form an inspection penetrant. When the inspection penetrant is applied to a metal being inspected by means of a magnetic inspection machine, the ferrous particles accumulate in any surface cracks (flaws) by magnetic attraction, thereby permitting the cracks to be readily discerned. If the ferrous particles are fluorescent, surface cracks will be brilliantly illuminated under black light.*

MAGNETIC INSPECTION POWDER. A dry powder containing ferromagnetic particles colored gray, black or red for contrast, designed to be dusted on metal parts being inspected by a magnetic inspection machine. The ferrous powder accumulates in any surface cracks (flaws) by magnetic attraction, thereby permitting the cracks to be readily discerned. If the ferrous particles are fluorescent, surface cracks will be brilliantly illuminated under black light.*

magnetic mine. See: mine, magnetic.

magnetic powder-impregnated tape. (impregnated tape) (dispersed magnetic power tape) *Electroacoustics.* A magnetic tape which consists of magnetic particles uniformly dispersed in a nonmagnetic material.

magnetic printing. (magnetic transfer) (crosstalk) *Electroacoustics.* The permanent transfer of a recorded signal from a section of a magnetic recording medium to another section of the same, or a different, medium when these sections are brought into proximity.

magnetism. The property of attraction. The property of the molecules of certain substances, as iron, by virtue of which they may store energy in the form of a field of force, due to the motion of the electrons in the atoms of the substance; a manifestation of energy due to the motion of a dielectric field of force.

magnetometer. An instrument for measuring the magnitude and direction of the earth's magnetic field or other types of magnetic fields.

magnetomotive force. The force which is necessary to establish flux in a magnetic circuit or to magnetize an unmagnetized specimen.

magnetostriction. Change in the dimensions of a body when it is magnetized.

MAGNETOSTRICTION ELEMENT. An item of metallic material which changes in dimensions when placed in a magnetic field or which varies a magnetic field or which varies a magnetic field when pressure is applied. Excludes COIL (as modified).*

magnetostriction loudspeaker. See: loudspeaker, magnetostriction.

magnetostriction microphone. See: microphone, magnetostriction.

magnetostriction oscillator. See: oscillator, magnetostriction.

magnetostrictive resonator. See: resonator, magnetostrictive.

magnetron. A high-vacuum thermionic tube capable of producing high output power in the microwave region of the frequency spectrum. This tube consists of a heater, cathode, usually a multisegment anode, and an external magnet (electro or permanent) for controlling the unidirectional current flow in the tube.

magnifying power. *Optics.* The ability of a lens, mirror, or optical system to make an object appear larger. If an optical element or optical system makes an object appear twice as high and twice as wide, the element or system is said to have a magnification of 2-power. The power of an optical instrument is the entrance pupil divided by the exit pupil, the focal length of the objective divided by the focal length of the eyepiece, or the apparent field of view divided by the true field of view.

magnitude. 1. Greatness; size; extension; spatial quality; quantity; capability of being greater or less; also, a quantity, extent, or number. 2. *Math.* A number assigned to a quantity, according to some stated rule, by means of which the quantity may be compared with other quantities of the same class.

magnitude method. Method of adjusting gunfire for range when the amount and direction of the deviation are known. Cf: bracketing method.

Magnus force. The sideways thrust on a rotating body when acted on by a current of air (or component of such current) perpendicular to its axis. This is the force that causes baseballs, golf balls and tennis balls to swerve. It also is one of the forces acting on a spinning projectile in flight because of the component of the air current acting perpendicular to the axis of the yawing projectile.

maint (abbr). 'Maintenance.'

maintenance. (maint) *Specif.* The servicing, repair, and care of materiel or equipment to keep it in operating condition. See: depot maintenance; field maintenance; organizational maintenance.

MAINTENANCE KIT, ELECTRONIC EQUIP-

MENT. A collection of items not all having the same basic name, which are of a supplementary nature to a major component or equipment. The items within the collection may provide replacement parts and/or facilitate such functions as inspection, test repair, preventive types of maintenance and the like, for the specific purpose of restoring and/or improving the operational status of a component or equipment comparable to its original capacity and/or efficiency. For kits consisting of assorted test instruments only, see: TEST SET (as modified). For kits consisting of assorted hand tools, see: TOOL KIT (as modified). See also: MODIFICATION KIT, ELECTRONIC EQUIPMENT and INSTALLATION KIT, ELECTRONIC EQUIPMENT.

maintenance vehicle. Vehicle used for carrying parts, equipment and personnel for maintenance or evacuation of vehicles.

major caliber. Gun or ammunition eight inches in caliber, or larger. Navy terminology. No longer used as an Army classification.

major combination. Single composite unit of mechanical equipment inherently complete for independent use and consisting of one or more major items. A major combination as issued is complete in respect to both equipment and spare parts, including items furnished by services other than the issuing service. A tank, complete with armament, equipment and spare parts, is an example of a major combination.

major defect. See: classification of defects.

major item. An end item, a group of end items individually classified by the responsible technical service, or an assembled group of items as procured or issued for a specific tactical role, excluding combinations required to complete the assigned tactical mission.

major repair. Repair work on items of materiel or equipment that need complete overhaul or substantial replacement of parts, or that require special tools.

malfunction. Faulty action of a gun or other mechanism which may result in a stoppage; failure of ammunition to function in a normal or expected manner; failure of a parachute to open properly, and the like.

malleability. The property of being permanently extended in all directions without rupture, as when metal is hammered or rolled.

Malta Test Station. Ordnance Corps field installation, located at Schenectady, New York.

MAM (abbr). 'Medium automotive maintenance.'

M&O (abbr). 'Maintenance and operation.'

maneuverability. *Aircraft.* That structural or aerodynamic quality which determines the rate at which attitude and direction of flight can be changed. Commonly expressed in g's.

Manhattan Project. A project of the Manhattan District, lasting from August 1942 to August 1946, that developed the atomic-energy program, with special reference to the atomic bomb.

This project consolidated work begun in 1939-1940

under joint auspices of the War and Navy Departments.

manifold. 1. A fitting with numerous branches used to convey fluids between a large pipe and several smaller pipes. 2. A header for a coil.

Intake manifold. The branch pipe, usually Y-shaped, which connects to the inlet port openings in cylinders, through which the combustible mixture of gas and air passes from the carburetor. It is generally a casting bolted to the cylinder block.

Exhaust manifold. A hollow casting (bolted to the cylinder block) through which the burnt gases from the various cylinders are discharged on their way through the exhaust pipe and through the muffler.

MANIFOLD, FUEL, GUIDED MISSILE. A specifically designed cylindrically shaped item for collecting and distributing guided missile propellant mixture to a missile propulsion unit.*

manifold pressure. The pressure in the intake manifold of an internal combustion engine.

manometer. An instrument for measuring the elastic pressure of fluids by balancing their pressure against a column of liquid and this difference indicated on a calibrated scale. Excludes BAROMETERS.*

mantlet. Also *mantelet*. Protective shield or armor, as in front of a gun, or attached to the front of a tank.

manual tracking. System of tracking a target in which all the power required is supplied manually through the tracking handwheels.

manufacturer's part number. Identification number or symbol assigned by the manufacturer to a part, sub-assembly or assembly.

map K. A proportional correction for the discrepancy between the scale of a firing chart and that of the plotting scale being used.

map range. The range from the piece to any point as scaled or computed from a map.

margin of safety. *Stress analysis.* The difference between the ultimate load and applied load.

marker. A sign or signal for marking a location on land or water. Frequently contains pyrotechnics.

MARKER KIT, UNDERWATER MINE. A group of items designed to be assembled to an underwater practice mine. Its purpose is to locate the underwater mine during training and evaluation operation.*

MARKER, LOCATION, MARINE. A item which contains a dye or a burning mixture for marking a location on water. It may contain an explosive charge for dispersion of contents.*

MARKER, LOCATION, TORPEDO. An item containing an explosive charge for expulsion of wooden disks. Its purpose is to indicate the point of actuation of an EXPLODER MECHANISM, TORPEDO for training purposes only.*

MARKER, TARGET. An item designed to indicate and signal, by means of the hoisting and lowering of various colored attached disks, the value of hits made

on a target or the number of misses. It generally consists of a staff of a specified length with one or more attached disks, colored on each face and secured in slot(s) on end(s) by means of attaching hardware such as bolts, washers and wing nuts.*

Mark number. A numerical designation for Naval Ordnance items, preceded by the word 'Mark' or 'MK.'

Also used on some British material and at one time used by the Ordnance Corps.

Marsh Buggy. Name given to vehicle whose chassis is supported by four 10-foot balloon tires. Rubber-creak chains, when placed on the wheels, enable the vehicle to travel over water. Designed to travel over marshlands.

mask. 1. Any natural or artificial obstruction that interferes with, or protects from, observation or gunfire. See: *defilade*. 2. A gas mask.

mass bombing. 1. Bombing with a great quantity of bombs. 2. Bombing by a concentration of many airplanes.

mass burning rate. Rate of consumption of propellant charge, usually expressed in lb/sec.

mass flow. The mass of fluid flowing past or through a particular reference plane, per unit of time.

massive bomb. A bomb employing a nuclear warhead.

massive weapon. A weapon that uses, or consists of, a nuclear warhead.

mass ratio. *Rockets.* The ratio of the total propellant weight to the gross rocket weight.

master station. In a hyperbolic navigation system, that station in a given pair of transmitting stations that controls the transmissions of the other station in the pair (the slave station) and maintains the time relationship between the pulses of the two stations.

mathead bombing. Very low bombing, esp. against shipping.

mat (*abbr*). 'Material; materiel.'

Matador. Name applied to an Air Force surface-to-surface tactical missile, controlled electronically from the ground. It is powered by a jet engine, is rocket-boosted, and attains subsonic speed. Has a range of several hundred miles, and can carry a conventional or atomic warhead. Has a combination radar and inertial guidance system. Transported to launching site on a transport trailer. This winged missile is also known as a pilotless bomber.

MAT, BLASTING. An item fabricated by weaving or plaiting together fiber rope or steel chain to a specific size. It is designed to be placed over blasts to confine flying fragments.*

matching. In electrical circuitry, the connecting of two circuits in such a way that correct impedance to insure maximum transfer of energy exists in each circuit.

match-the-pointer system. Remote control system for artillery fire control. Also called 'follow-the-pointer system.' See: *follow-the-pointer indicator*.

materiel. (*mat*) [Also sometimes spelled *matériel* as in the French.] 1. Things of all kinds required for

the equipment, maintenance, operation, and support of military activities, both combat and noncombat.

2. In a restricted sense, those things used in combat or logistic support operations, as weapons, motor vehicles, airplanes, component parts of machines, special-purpose clothing, etc., as distinguished from items of ordinary use, such as uniforms, food, bedding, medicines, housekeeping equipment, etc.

matrix. 1. Any rectangular array of symbols. 2. A square array of numbers from an algebraic ring; an element of a matrix algebra. 3. Natural material in which some other material is embedded. 4. *Electronic computers.* An array of quantities in a prescribed form, usually capable of being subject to a mathematical operation by means of an operator or another matrix according to prescribed rules; an array of circuit elements, e.g., diodes, wires, magnetic cores, relays, etc., which are capable of performing a specific function, e.g., conversion from one numerical system to another.

MATS (*abbr.*). 'Military Air Transport Service.' (Pronounced as a word.)

Maumelle Ordnance Works. Ordnance Corps field installation, located at Little Rock, Arkansas.

max (*abbr.*). 'Maximum.'

maximum barrel pressure. See: pressures, gun.

maximum chamber pressure. See: pressures, gun.

maximum depression. The maximum vertical angle below the horizontal at which a piece can be laid and still deliver effective fire.

maximum effective range. The greatest distance at which a weapon may be expected to fire accurately to inflict casualties or damage.

maximum elevation. The greatest vertical angle at which an artillery piece can be laid. It is usually limited by the mechanical structure of the piece.

maximum gradability. Steepest slope a vehicle can negotiate in low gear. This is usually expressed in percentage of slope, namely, the ratio between the vertical rise and the horizontal distance traveled. It is sometimes expressed by the angle between the slope and the horizontal.

maximum metal condition. In the tolerancing of dimensions in the Ordnance Corps, the unilateral tolerance system is used, except in certain special cases. Under this system the basic dimension is the one corresponding to *maximum metal condition*, for example, a bar diameter carries a minus tolerance, and a hole diameter carries a plus tolerance. Applies also to parts made from material other than metal, such as plastic parts. See also: **minimum metal condition.**

maximum ordinate. Difference in altitude between the origin and highest point of the trajectory of a projectile.

maximum or peak chamber pressure. See: pressures, gun.

maximum pressure. See: pressures, gun.

maximum range. A capability of an aircraft, gun, radar transmitter, or the like that expresses the most distant

point to which the aircraft can fly, the gun can shoot, etc. See: range.

maximum rated pressure. See: pressures, gun.

maximum sky brightness. A meteorological condition, usually involving uniform clouds or overcast, which impedes observation of pyrotechnic signals.

maximum strain theory. The theory that plastic flow will occur when the unit strain in any direction is equal to the strain corresponding to the elastic limit. The Ordnance Corps has adopted this theory as the basis of gun design.

maximum thrust. *Missile testing.* The highest thrust recorded on the thrust-time trace.

maximum undistorted output; maximum useful output. For sinusoidal input, the greatest average output power into the rated load with distortion not exceeding a specified limit.

mbl (*abbr.*). 'Mobile.'

mcs (*abbr.*). 'Megacycles per second.'

MD (*abbr.*). 'Methyldichloroarsine' (war gas).

M damage. See: damage categories.

M-day. The day on which mobilization begins or is postulated to begin.

meadow. Ranges of air-fuel ratio within which smooth combustion may be had.

meal powder. An unglazed black powder of very fine granulation. See also: **black powder; coal powder.**

mean. A quantity representing the average of two or more other quantities, arrived at by adding the quantities together and dividing by their number. Also called 'arithmetic mean.' The 'geometric mean' of two quantities is the square root of the product of the quantities.

mean aerodynamic chord. See: chord, mean aerodynamic.

mean chord. That chord of an airfoil that is equal to the sum of all the airfoil's chord lengths divided by the number of chord lengths added.
A mean chord is equal to the area divided by the span.

mean chord of a wing. See: chord, mean, of a wing.

mean deviation. Average of the distance between the center of impact, or burst, and points of impact or burst.

mean effective pressure. (MEP) The average pressure, in pounds per square inch, exerted inside the cylinder of an internal combustion engine during the power stroke.

mean error. Algebraic mean of the errors.

mean free path. *Electroacoustics.* For sound waves in an enclosure, the average distance sound travels between successive reflections in the enclosure.

mean height of burst. Average of the heights of bursts of a group of shots fired with the same firing data.

mean point of impact. The point which is at the geometrical center of all the points of impact of the several shots of a salvo, excluding wild shots.

- When firing time-fuzed projectiles, the point of detonation of such a projectile is considered to be the point of impact.
- mean point of impact error.** Distance between the mean point of impact and the target. See: center of burst error.
- mean pulse time.** The arithmetic mean of the leading edge pulse time and the trailing edge pulse time.
For some purposes the importance of a pulse is that it exists (has significant quality) at a particular instant of time. For such applications the important quantity is the 'mean pulse time.' The 'leading edge pulse time' and the 'trailing edge pulse time' are significant primarily in that they may allow a certain tolerance in timing.
- mean range.** Average distance reached by a group of shots fired with the same firing data.
- mean trajectory.** The trajectory that passes through the center of impact or center of burst.
- measuring wedge.** An optical element employed in a range or height finder to deviate light entering the variable angle end of the instrument. One type consists of a single, perpendicular wedge which is moved in alignment with the path of light to increase or decrease the amount of deviation. The other type consists of one or two pairs of circular wedges, each pair being capable of rotating equally or simultaneously in opposite directions about the axis of the path of light to produce variable deviation. The wedges of both types are compound elements corrected for color.
- mech (abbr).** 'Mechanical.'
- mechanical efficiency.** The external efficiency of an engine rated in horsepower, as of an internal combustion reciprocating engine, expressed as the ratio of brake horsepower to indicated horsepower.
- mechanical fuze.** See: fuze, mechanical.
- mechanical integration.** A solution of a system of differential equations by mechanical means.
- mechanical jamming.** Intentional production of multiple false targets by such devices as window or corner reflectors, to interfere with reception of signals by another station.
- Mechanical Mule.** Popular name for a lightweight, low-silhouette infantry light weapons carrier, powered by an opposed-cylinder engine. See: CARRIER, LIGHT WEAPONS, INFANTRY.
- mechanical reliability (of motor vehicle).** Ability of a vehicle to operate successfully over great mileages without failure; the ability of a vehicle to continue operation though assemblies are damaged.
- mechanical time and superquick fuze.** (MTSQ) See: FUZE, MECHANICAL TIME AND SUPER-QUICK.
- mechanical time fuze.** See: FUZE, MECHANICAL TIME.
- mechanize.** To equip a military force with armed and armored motor vehicles, such as tanks and combat vehicles. Mechanization differs from motorization, in that the motorization of a unit provides a means of transportation only, whereas in mechanization the unit both travels in, and fights from, its vehicles. Cf: motorize.
- mechanized cavalry.** See: armored cavalry.
- mechanized gun.** Gun mounted on, and fired from, a motor vehicle. It is usually an artillery gun mounted on an armored, wheeled or tracklaying vehicle.
- med (abbr).** 'Medium.'
- medium.** *Optics.* Any substance or space through which light can travel.
- medium-altitude bombing.** Horizontal bombing with the height of release at an altitude between 8,000 and 15,000 feet.
- medium antiaircraft artillery.** Conventional antiaircraft artillery pieces, 90 mm or larger, the weight of which in a trailed mount, excluding on-carriage fire control, does not exceed 40,000 pounds.
- medium artillery.** Artillery which includes (1) guns of greater caliber than 105 mm but less than 155 mm, and (2) howitzers with calibers greater than 105 mm but not greater than 155 mm.
- medium caliber, or intermediate caliber.** Greater than four inches and less than eight inches. Navy terminology. No longer used as an Army classification.
- medium delay fuze.** See: fuze, medium delay.
- medium frequency.** (MF) See: frequency, electronic.
- medium range radar.** Equipment whose maximum range on a reflecting target of one square meter normal to the signal path exceeds 150 miles but is less than 300 miles, provided line-of-sight exists between the target and the radar.
- megaton.** The explosive power of 1,000,000 tons of TNT. Cf: kiloton.
- melinite.** Picric acid (which see), a high explosive. Also called 'lyddite.'
- melt.** A quantity of material, such as explosives, melted in one kettle at one time.
- melt loading.** Process of melting solid explosive by heat and pouring into bombs, projectiles, and the like to solidify. Also called 'cast loading.' Cf: pressed loading.
- memory.** *Electronic computers.* Any device into which information can be introduced and then extracted at a later time. The mechanism or medium in which the information is retained commonly forms an integral part of a computer. See also: storage, a preferred term.
- memory capacity.** *Electronic computers.* The maximum number of distinguishable stable states in which a memory device can exist is a measure of its capacity. It is customary to use the logarithm to the base two of that number as a numerical measure of the memory capacity. In this case, the unit of memory capacity is a binary digit.
- memory, delay-line.** *Electronic computers.* See: delay-line memory.
- meniscus-convergent lens.** A lens, the surfaces of which are curved in the same direction; one surface

- is convex, the other is concave. The convex surface has the greater curvature or power.
- MEP** (*abbr.*). 'Mean effective pressure.'
- méplat.** The flat nose formed by truncation of the ogival portion of a projectile or point fuze.
- Mercator chart.** A map based upon a Mercator projection and widely used for surface and air navigation.
- Mercator projection.** A projection with the base line at the equator that shows the meridians as parallel lines equally spaced and the parallels as straight lines, perpendicular to the meridians, so spaced mathematically as to produce the property of true shape in the imposed geographic representation.
- Exaggeration of area increases with distance from the point of tangency, but a straight line on this projection, between any two points, represents a rhumb line or a true course.
- mercury fulminate.** A primary high explosive (which see) that is detonated by friction, impact, or heat; fulminate of mercury. Mercury fulminate is used to initiate other less sensitive explosives in fuzes, projectiles, mines, or bombs. Its military uses have been taken over to a large extent by lead azide because of the poor stability of mercury fulminate at elevated temperatures.
- mercury strain test.** Test of brass cartridge cases which causes cracks to appear at the time of the test; cracks which would appear naturally in the future. Test involves treatment with nitric acid and mercurous nitrate.
- meson.** *Physics.* A particle with a mass approximately 200 times that of an electron, having either a negative or positive charge, formerly called a 'mesotron' or 'heavy electron.'
- The meson was first detected in cosmic rays.
- met** (*abbr.*). 'Meteorology.'
- metal fatigue.** A weakening in the strength of a metal caused by repeated or fluctuating stresses.
- metal fouling.** Deposits of metal that collect in the bore of a gun. Metal fouling comes from the jackets or rotating bands of projectiles.
- metal jacket.** See: jacket, bullet.
- metallic belt.** See: belt, link.
- metallographic tests.** *Metals.* Tests to determine the structural composition as shown at low and high magnification and by X-ray diffraction methods; tests include macro-examination, micro-examination, and X-ray diffraction studies.
- metascope.** Hand carried device designed for locating a source of infrared rays.
- met data.** See: meteorological data.
- meteorological check point.** *Gunnery.* Arbitrarily selected point for which meteorological corrections are determined as a time saving expedient. These corrections are applied to any target located within transfer limits of the meteorological check point.
- meteorological correction.** Adjustment made in the firing data of a gun or other weapon to allow for the effect of wind, air pressure, etc., on the flight of a projectile.
- meteorological data.** Facts pertaining to the atmosphere, especially wind, temperatures, and air density, which are used in determining correction to basic firing data. Called 'met data.'
- meteorological datum plane.** Reference plane assumed as a basis or starting point for atmospheric data furnished to artillery. Its altitude is that of the meteorological station.
- meteorological message.** Message giving data about atmospheric conditions, usually in stereotyped form.
- meter, blast.** A device for measuring the severity of a blast wave. Electric blast meters give a record of peak pressure, duration of the pressure wave and enable total impulse to be computed. The simplest meter is the diaphragm type, in which holes of various sizes (diameters) are covered by a paper or foil diaphragm. Observation of the smallest hole in which the diaphragm is broken gives a comparative measure of the peak pressure.
- meter, engine-hour.** An instrument, generally located on the (front) dash of automotive vehicles, that registers the total number of hours the engine operates.
- metering rod.** A device consisting of a long metallic pin of graduated diameters fitted to the main nozzle of a carburetor (on an internal combustion engine) or passage leading thereto in such a way that it measures or 'meters' the amount of gasoline permitted to flow by it at various speeds. Called also 'metering pin.'
- methylchloroarsine.** (MD) A blister gas, very similar to ethyldichloroarsine (which see).
- methyl violet test.** See: heat tests.
- metro K.** Range correction for artillery in yards per thousand yards, determined from a meteorological message.
- MEV** (*abbr.*). 'Million electron-volts.'
- MEW** (*abbr.*). 'Microwave early warning.'
- MF** (*abbr.*). 'Medium frequency.'
- MG** (*abbr.*). 'Machine gun.'
- Michoud Ordnance Plant.** Ordnance Corps field installation, located at New Orleans, Louisiana.
- microbarograph.** Instrument that automatically records changes of air pressure. It is more accurate than a barograph.
- microphone.** An item specifically designed for converting sonic or supersonic waves in air into equivalent electrical impulses.*
- MICROPHONE, CAPACITOR.** A microphone which depends for its operation upon variation of its electrostatic capacitance.*
- MICROPHONE, CARBON.** A microphone which depends for its operation upon the variation in resistance of carbon granules.*
- MICROPHONE, CRYSTAL.** A microphone which depends for its operation upon the generation of an electrical charge by the deformation of a crystal having piezoelectric properties.*

MICROPHONE, DYNAMIC. A microphone which depends for its operation upon the generation of an electromotive force by the motion of a moving coil within a magnetic field.*

MICROPHONE, MAGNETIC. A microphone which depends for its operation upon variations in reluctance of a magnetic circuit.*

microphone, magnetostriction. *Electroacoustics.* A microphone which depends for its operation on the generation of an electromotive force by the deformation of a material having magnetostrictive properties.

microphone, moving coil. See: **MICROPHONE, DYNAMIC.**

microphone, moving conductor. A microphone the electric output of which results from the motion of a conductor in a magnetic field.

microphone, parabolic reflector. *Electroacoustics.* A microphone employing a parabolic reflector to improve its directivity and sensitivity.

MICROPHONE, RIBBON. A microphone which depends for its operation upon variations in the electromotive force generated in a metallic ribbon within a magnetic field or the change in resistance of a suspended hot wire due to the change in temperature caused by the cooling effect of the particle velocity of a sound wave.*

microsecond. A millionth part of a second.

microwave. A very short electromagnetic wave, esp. in the frequency range of 1,000 to 30,000 megacycles, or in the wavelength range of 30 centimeters to 1 centimeter.

microwave early warning. (MEW) A highpower, long-range radar, giving high resolution and used for early warning.

midpoint. In gunnery, point on an aerial target's course which is at a minimum slant range from the gun position.

Mighty Mouse. Popular name for a type of 2.75-inch air-to-air folding-fin rocket developed by the Navy.

MIL (abbr). 'Military.'

mil. 1. Unit of measurement for angles based on the angle subtended by 1/6400 of the circumference of a circle. A mil is the angle subtended by one unit at one thousand units. 2. 1/1000 of an inch (wire measurement). 3. (abbr). 'Military.'

Milan Arsenal. Ordnance Corps field installation, located near Milan, Tennessee.

mil formula. Mil relation used in gunnery; expressed by $n = W/R$, where n is the angular measurement in mils between two points, W is the lateral distance in yards between the points, and R is the mean distance to the points in thousands of yards. The mil relation is approximately true for angles less than 400 mils. See also: **mil** (sense 1).

military characteristics. Those characteristics of equipment found desirable or necessary to the performance of a military mission, either combat or noncombat.

Military characteristics are prescribed by the using arms and usually form the basis of initiating development of a new item.

military department. *Specif.* The Department of the Army, the Department of the Navy, or the Department of the Air Force.

military grid. Network of squares made of north-south lines showing distance east of arbitrary origin, and east-west lines showing distance north of the same reference point. The distance between grid lines is 1,000, 5,000 or 10,000 yards (or meters), depending on the scale of the map.

military grid system. Method of subdividing the earth's surface into zones or segments sufficiently small to allow mathematical treatment as a plane surface for the purpose of simplifying azimuth and distance computations and for providing a simple but accurate means of location reference on military maps. See: **military grid.**

military requirement. The statement of a recognized and approved need for a new item, a weapons system, or an assemblage for military use.

military research. Investigation or experimentation to discover and interpret new facts or to analyze existing facts with the aim of applying new or revised conclusions, theories, or laws to areas of interest to the military services.

military specification. A procurement specification promulgated by the military agencies and used for the procurement of military supplies and equipment.

military standard test. Specifications approved by the Department of Defense, to ensure uniformity of test conditions.

military target. 1. Any industrial plant, city, or other object, or any person, group of persons, or force marked as a target for destruction, damage, injury, or capture because of its direct or indirect use in the conduct or support of an enemy's military endeavor. 2. In restricted usage, a military person, force, installation, or area marked as a target because of its use, or potential use, in direct military operations. Distinguished from an industrial target.

milling machine. A machine tool for shaping material generally of a metallic character which is fed against a revolving multitoothed cutter.*

millisecond. A thousandth part of a second.

mils error. Error in firing data expressed in terms of mils of angular distance. Mils error differs from yards error, which is an expression of error in yards of linear distance.

min (abbr). 1. 'Minimum.' 2. 'Minute(s).'

mine. 1. An encased explosive or chemical charge designed to be placed in position so that it detonates when its target touches or moves near it or when touched off by remote control. General types are: land mine and underwater mine. 2. An explosive charge placed in a subterranean tunnel under a fortification. 3. To place mines or prepared charges. See also: **mine, land; MINE, UNDERWATER.**

mine, acoustic. A MINE, UNDERWATER designed to be detonated by the sound waves from a ship's propeller, engines, or the like.

mine action. The explosion of a projectile below the surface of the ground. Cf: **mining effect.**

mine, activated. A mine having a secondary fuze which will cause detonation when the mine is moved or otherwise interfered with. The device may be attached either to the mine itself or to a second mine or to an auxiliary charge beside or beneath the mine.

mine, actuated. A controlled mine whose detecting element has been operated, resulting either in explosion of the mine, or signaling to the control station.

mine, aerial. 1. A mine designed to be dropped from an aircraft, especially into water. Hence, aerial mine-laying, aerial mining. 2. An early World War II light case bomb, the predecessor of the blockbuster, that was normally dropped by parachute. Was also called a 'land mine.'

mine, amphibious. A mine designed especially to hinder beach landings and river crossing operations by damaging or destroying landing craft, small boats, water fording vehicles, and floating bridges. It may be contact, controlled, drifting, ground or ground influence type.

MINE, ANTIPERSONNEL. A land mine, for use against personnel, consisting of a small amount of high explosive, generally less than 1 pound, in a metallic or nonmetallic container fitted with a detonating fuze arranged for actuation by pressure or release of pressure by pull on a trip wire, or by release of tension (cutting) of a taut trip wire. Two types are available, the blast type, which explodes in place, and the bounding type, which projects a fragmenting body into the air that, upon detonation, scatters fragments over a wide area. See also: **mine, bounding.**

MINE, ANTIPERSONNEL, PRACTICE. An anti-personnel practice mine is the same size, weight, and shape as an antipersonnel mine but contains a small charge consisting of black powder or pyrotechnic composition instead of a high explosive.

MINE, ANTITANK. A land mine, consisting of an explosive charge, contained in a metallic or non-metallic case, with provision for a main fuze, and usually for secondary, antiremoval fuzes. Designed to function when a tank or other vehicle runs over it. Provided with a charge designed to produce disabling effect on a tank.

MINE, ANTITANK, PRACTICE. An antitank practice mine is of the same size, weight, and shape as an antitank mine but contains a small charge consisting of black powder or pyrotechnic composition instead of a high explosive.

mine, armed. 1. Mine with all safety devices removed so the mine is ready to function. 2. Controlled underwater mine that will be fired when firing power is applied to the shore cable.

mine, booby trapped. A hidden mine arranged so that it will be detonated by the disturbance of an apparently harmless object.

mine, bounding. Type of MINE, ANTIPERSONNEL usually buried just below the surface of the ground. It has a small charge which throws the case up in the air. This case explodes at a height of three or four feet, throwing shrapnel or fragments in all directions.

mine case. See: **CASE, UNDERWATER MINE.**

MINE, CHEMICAL AGENT. Container filled with war gas for detonation by burster. Used to contaminate materiel or areas.

mine, contact. Mine fitted with a firing device which explodes the mine when it is touched by a vessel, person, or vehicle.

mine, controlled. Mine fitted with firing devices capable of being activated by an electrical system leading to a central control station. May apply to underwater mines or to land mines.

mine, delayed action. Explosive charge designed to go off some time after planting, and often left behind by a retreating enemy to harass or destroy pursuing forces.

mine detecting equipment. See: **DETECTING SET, MINE.***

mine detector. Electrical or magnetic instrument used to locate mines.

mine, drifting. MINE, UNDERWATER adjusted to float, unanchored, on or just below the surface of the water. A special type of drifting mine is the oscillating mine, which rises and falls gently as it continuously seeks its point of balance.

mine, dummy. False or imitation land mine used to deceive the enemy, or used for training purposes.

mine field. The space either in water or on land in which mines have been placed.

mine field gap. A portion of a mine field in which no mines have been laid, of specified width to enable a friendly force to pass through the mine field in tactical formation. It will seldom be less than 100 yards wide.

mine field lane. An unmined (or demined) route through any mine field, normally 8 yards wide and suitably marked. For lanes through enemy mine fields, the width will depend on the method of breaching and the purpose for which required.

mine, ground. MINE, UNDERWATER possessing considerable negative buoyancy and intended to rest on the bottom. For this reason it is suitable for use in relatively shallow water only.

mine, ground influence. A mine, ground (which see) designed to be dropped from aircraft, and to rest on the bottom. It is detonated by magnetic or other influence.

mine, ice. A waterproof mine placed in or under the ice, detonated by a pressure device on the surface or exploded deliberately to break river or lake ice in destroying it. See also: **ice mining.**

mine, improvised. A mine manufactured of available materials because of unavailability of standard mines or because those mines available are not capable of producing the desired result.

mine, land. Container filled with high explosive or chemicals, placed on the ground or lightly covered, and fitted with a fuze or a firing device or both. It is usually set off by the weight of vehicles or troops passing over it.

mine, magnetic. MINE, UNDERWATER intended to

- be detonated when the hull of a passing vessel causes a change in the magnetic field at the mine.
- mine, moored.** MINE, UNDERWATER with positively buoyant mine case, held at a predetermined depth beneath the surface by a cable or chain mooring attached to an anchor that rests on the bottom.
- mine, oscillating.** See: mine, drifting.
- mine, phony.** Harmless object used to simulate mine or to give false signals in detectors. Used in phony mine fields.
- MINE PLANTING EQUIPMENT, MECHANICAL.** A group of items for uncrating, fuzing and magazine loading of antitank mines, and the mechanical emplacement of barrier type mine fields.*
- mine, practice.** Imitation land mine used in training. A practice mine may contain a smoke producing agent for maneuvers or for practice in observing the effects of mines against vehicles, or it may be simply a block of wood, metal, or concrete for practice in laying mine fields.
- mine, sea.** See: MINE, UNDERWATER.
- mine, selected.** Controlled MINE, UNDERWATER which has been connected, through the selector assembly, to the control equipment at the shore station. A selected mine is exclusive of all other mines in its group and may be fired, tested, or disarmed independently of the remainder of the group. See: mine, controlled.
- mine, submarine.** See: MINE, UNDERWATER.
- mine sweeper.** 1. Heavy road roller pushed in front of a tank, used to destroy land mines by exploding them. 2. A ship, especially equipped for locating and removing or neutralizing underwater mines.
- mine-sweeping.** Process of detecting and removing land mines or underwater mines.
- MINE, UNDERWATER.** An item designed to be located under water and exploded by means of propeller vibration, magnetic attraction, contact, and/or remote control. When empty or inert loaded it may be used for training purposes.*
- MINE, UNDERWATER, PRACTICE.** An item designed for launching from an aircraft to simulate the trajectory and falling speed of a MINE, UNDERWATER. Various weights are installed to represent different types of underwater mines.*
- miniature practice bomb.** See: bomb, miniature practice.
- miniature range.** Small range on which targets and distances are reduced in scale; used in firing practice.
- minimum altitude bombing.** Horizontal or glide bombing with the height of release at an altitude under 900 feet. It includes masthead bombing (bombing at masthead level), which is sometimes erroneously referred to as skip bombing.
- minimum metal condition.** The condition corresponding to the removal of the greatest amount of material permissible in a machined part. Under the *maximum metal* method of dimensioning this condition results from the use of the *tolerance* applied to the *basic dimension*. See also: maximum metal condition.
- minimum range.** 1. Least range setting of a gun at which the projectile will clear an obstacle or friendly troops between the gun and the target. 2. Shortest distance to which a gun can fire from a given position.
- minimum safe distance.** (MSD) *Atomic explosion.* The total distance from desired ground zero (DGZ) to friendly positions required to ensure troops safety. MSD is the sum of the radius of safety and the buffer distance.
- minimum turning circle.** The diameter of the outside circle described by the outside track or wheel when the vehicle is making its shortest possible turn; the diameter of the smallest hollow cylinder within which the vehicle can make a complete turn.
- mining effect.** Violent upheaval or movement of earth and the destruction or damage resulting therefrom, generally caused by an explosion below the surface of the earth. Mining effect may be contrasted with the **blast effect** produced by an explosion on or above the surface of the earth.
- minol.** High explosive mixture containing 40 percent TNT, 40 percent ammonium nitrate, and 20 percent powdered aluminum. Produces large blast effect. Suitable for melt loading (which see).
- minor caliber.** Guns and ammunition over caliber .60 and including three inch. Navy terminology. No longer used as an Army classification.
- minor defect.** See: classification of defects.
- minor repair.** Repair which in general permits quick return to serviceability without extensive disassembly. Can be accomplished with few tools and little or no equipment and normally does not require evacuation to a rear echelon.
- minSAT (abbr).** 'Minimum safe air travel.'
- Minuteman.** Intercontinental ballistic missile under development for the Air Force. Utilizes solid fuel.
- misfeed.** Failure to supply ammunition properly, especially to a magazine-fed or belt-fed automatic gun.
- misfire.** Failure of a round of ammunition to fire after initiating action is taken. Cf: hangfire; see also: fire (sense 1).
- miss.** *Specif.* An instance of failing to hit, as with a projectile or bomb. Cf: near miss.
- missile.** (msl) 1. Any object that is, or is designed to be, thrown, dropped, projected, or propelled, for the purpose of making it strike a target. 2. A guided missile (which see). 3. A ballistic missile (which see).
- missile, antiaircraft.** A guided or a ballistic missile intended to be launched from the surface against an airborne target. See: ballistic missile; guided missile.
- missile attitude.** The position of a missile as determined by the inclination of its axes (roll, pitch, and yaw) in relation to another object, as to the earth.
- MISSILE, FREE FALLING, ANTIPERSONNEL.** A nonexplosive missile designed to be dropped from aircraft, for effect against personnel.

MISSILE, FREE FALLING, TIRE-PUNCTURING.

A nonexplosive missile designed to be dropped from aircraft, on roads and airfield runways, to cause damage to tires of vehicles or aircraft by contact.

MISSILE IMPACT PREDICTOR GROUP. A group that provides facilities for determining the point of impact of a missile.*

MISSILE POSITION TRACKING GROUP. A group that provides facilities for determining the in-flight position of a missile.*

missilier. [Coined by analogy with *bombardier* and *grenadier*.] A person skilled in launching and directing guided missiles.

mistake. *Electronic computers.* A human blunder which results in an incorrect instruction in a program or in coding, an incorrect element of information, or an incorrect manual operation.

Misznay-Schardin effect. The acceleration of a solid end-plate (usually metal) from the face of an explosive charge under detonation, such that the end-plate remains a solid and is usable as a missile.

mixed salvo. Series of shots in which some fall short of the target and some beyond it. A mixed salvo differs from a bracketing salvo, in which the number of shots going over the target equals the number falling short of it.

mixed sensing. In artillery, applied to height of burst only, for a group of rounds which result in both 'airs' and 'grazes' in any proportion.

mixture. *Specif.* Short for 'fuel-air mixture'; 'fuel-oxidizer mixture'; etc.

mixture ratio. The ratio of the weight of oxidizer used per unit of time to the weight of fuel used per unit of time.

MK (abbr). 'Mark.'

mm (abbr). 'Millimeter.'

MMG (abbr). 'Medium machine gun.'

MNT (abbr). 'Mononitrotoluene.'

mob (abbr). 'Mobilize; mobilization.'

mobile armament. See: **mobile artillery.**

mobile artillery. Artillery weapons designed for movement and ready conversion from traveling position to firing position. Wheels or other suspension devices are not ordinarily removed in the firing position.

mobile mount. Any mount which is mobile, as contrasted to one which is fixed; as a mount for mobile artillery.

mobilization. (mob) 1. The calling up of reserves and the assembly of military forces in accordance with a mobilization plan in order to meet a military or national emergency; the process of augmentation associated with these actions. 2. The action of organizing and marshaling industry for war purposes.

mobilize. 1. To convert an industry, economy, or country to a wartime basis; to call a *person* up to active duty under a mobilization plan. 2. To bring together the units or persons of a military force; to bring the force together. 3. Of persons: To assemble and make ready for action.

Mocar babbitt. Trade name for a high lead-base alloy designed for use in main, connecting, and camshaft bearings for automobile engines, and in bearings of gas engines, paper mills, mining machinery, electric motors, road machinery, etc.

mockup. A model, often full-sized, of a piece of equipment, or installation, so devised as to expose its parts for study, training, or testing.

A mockup is sometimes made from a functioning piece of equipment by cutting it into parts, keeping it generally together by hinges, clamps, or the like.

MOD (abbr). 'Modification.'

mode. The figure in a series of statistical data which occurs most often.

model. 1. An object, usually in miniature, built to give some idea of what a functioning prototype would be like. See: **production model**; **prototype**. 2. A miniature copy of an object, as an airplane or motor vehicle. 3. Year, Mark number, or other type designator adopted by manufacturer, producer, or purchaser to identify an item of equipment, its design, unit assemblies, and parts. See: **Ordnance type designator**; **Mark number**.

MODEL, COMBAT VEHICLE. A facsimile or replica of a combat vehicle embodying its superficial characteristics and proportional dimensions. It is used for recognition teaching. Excludes **MODEL, TANK**.*

model designation. See: **Ordnance type designator.**

model number. See: **Ordnance type designator.**

MODEL, TANK. A facsimile or replica of a tank embodying its superficial characteristics and proportional dimensions. It is used for recognition teaching.*

modernization code system. A system of coding to guide logistic actions concerning military items or assemblages during development and use. Modernization codes signify the relative desirability of acquiring, utilizing and disposing of items of materiel. It is in effect from the development stage until the item or assemblage is type classified obsolete.

mode transducer. A device for transforming an electromagnetic wave from one mode of propagation to another mode of propagation; mode transformer.

mode transformer. See: **mode transducer.**

modification. (mod) A major or minor change in the design of an item of materiel, effected in order to correct a deficiency, to facilitate production, or to improve operational effectiveness.

modification kit. A item composed of a group of articles bearing different basic names, which is stored and issued as a unit for accomplishing a particular modification to a particular item of equipment.

MODIFICATION KIT, ELECTRONIC EQUIPMENT. A collection of items not all having the same basic name which are employed individually or conjunctively to alter the design of a component or equipment. The items may be used in lieu of, or supplemental to, one or more items within the component or equipment to effect such attributes as

improved stability, greater efficiency, extended application and the like, which were not previously inherent in its original design. See also: **INSTALLATION KIT, ELECTRONIC EQUIPMENT and MAINTENANCE KIT, ELECTRONIC EQUIPMENT.***

MODIFICATION KIT, GUIDED MISSILE LAUNCHER. A collection of items and/or assemblies not all having the same basic name, designed to convert a basic guided missile launcher for use in various type installations, such as fixed, transportable, mobile, airborne, seaborne and portable installation. It may include necessary tools and instructions.*

modify. To make a major or a minor change in the design or assembly of an item of materiel.

modulate. 1. To vary the amplitude, frequency, or phase of a radio or electric wave; to change a wave by varying its amplitude, frequency, or phase. 2. To vary the velocity of the electrons in an electron beam.

modulation. The process of varying the amplitude, frequency, or phase of a carrier wave with time, to transmit information.

modulation, amplitude. See: **amplitude modulation.**

modulation factor. The ratio of the peak variation actually used to the maximum design variation in a given type of modulation.

In conventional amplitude modulation, the maximum design variation is considered that for which the instantaneous amplitude of the modulated wave reaches zero.

modulation, frequency. See: **frequency modulation.**

modulation noise. *Electroacoustics.* The noise caused by the signal. The signal is not to be included as part of the noise.

The term is used where the noise level is a function of the strength of the signal.

modulation, velocity. A form of modulation in which the electrons of a stream are speeded up and slowed down so as to produce bunches or groups.

modulator, balanced. In electronics, a circuit arrangement in which a carrier frequency is controlled by a signal wave in a manner to generate the sideband frequencies but suppress the carrier in the output.

modulus of compressibility. See: **compressibility, modulus of.**

Mohaupt effect. The effect of a metal liner introduced in a shaped charge to increase penetration. Generally incorporated in **HEAT** ammunition. See also: **Munroe effect.**

Molotov cocktail. See: **grenade, frangible.**

moment coefficient. The coefficients used for moment are similar to coefficients of lift, drag, and thrust, and are likewise dimensionless. However, these must include a characteristic length, in addition to the area. The span is used for rolling or yawing moment, and the chord is used for pitching moment.

moment, hinge. See: **hinge moment.**

moment of inertia. A measure of the resistance offered

by a body to angular acceleration; the products of mass and the distance squared from the axis of reference, summed over all particles in the system or body.

monobloc engine. An engine in which the cylinders are cast in one block.

monobloc gun. Gun (tube) made from a single piece and without a liner. See: **liner** (sense 1), and cf: **built-up gun.**

monobloc projectile. See: **projectile, monobloc.**

monocoque. [French 'single shell.'] 1. A type of airplane construction in which the skin of the fuselage bears the primary stresses arising in the fuselage. 2. An airplane of this construction, such as the Messerschmitt 109. 3. A monocoque fuselage.

monofuel propulsion. Propulsion system which obtains its power from a single fuel (**monopropellant**). When used in rocket units, this fuel must furnish both oxygen supply and the hydrocarbon for combustion. Cf: **bifuel propulsion.**

monopropellant. A liquid chemical compound, or liquid mixture of compatible chemical compounds, which is stable and can be handled, stored, and fed into the combustion chamber of the missile from one storage tank. The liquid must then be capable, under proper ignition conditions, of supporting its own combustion at a rate to develop a useful thrust. Cf: **bipropellant; multipropellant.**

MOORING AND SAFETY DEVICE, UNDERWATER MINE. An item designed to provide a safe-when-adrift feature in an underwater mine. It is assembled to an underwater mine case and contains a spring loaded shackle to which the mooring is secured. When properly moored, tension of the mooring chain or cable operates the underwater mine extender; when this tension is released the item releases the extender and allows it to retract, rendering the underwater mine safe.*

Morgantown Ordnance Works. Ordnance Corps field installation, located at Morgantown, West Virginia.

mortality factor. Numerical factor used to determine the quantity of replacement parts to be allowed any echelon of maintenance. It is based on durability of any given part relative to the durability of the entire unit.

mortar. A complete projectile-firing weapon, rifled or smooth bore, characterized by shorter barrel, lower velocity, shorter range and higher angle of fire than a **howitzer** or a **gun**, sense 2. (See separate entries.) Like the howitzer, the mortar may be fired with any one of several propelling charges or zones, according to the trajectory desired. Most present day mortars are muzzle loaded and of simple construction for lightness and mobility.

MORTAR, ARTILLERY. A muzzle-loaded weapon with a short tube, usually having a smooth bore, and fired at high angles of elevation. The bore diameter is 105 millimeters or larger. It is used to reach nearby targets that are protected or concealed by intervening hills or other short-range barriers. It is

transported by man, animal, parachute, or as unmounted vehicle armament. See also: **MORTAR, ARTILLERY, TOWED.***

MORTAR, ARTILLERY, TOWED. A muzzle-loaded weapon with a short tube, usually having a smooth bore, and fired at high angles of elevation. The bore diameter is 105 millimeters or larger. It is used to reach nearby targets that are protected or concealed by intervening hills or other short-range barriers. It is transported on a trailer type vehicle. See also: **MORTAR, ARTILLERY.***

mortar carriage. See: carriage.

MORTAR, INFANTRY. A muzzle-loaded weapon with a short tube, usually having a smooth bore, and fired at high angles of elevation. The bore diameter is less than 105 millimeters. It is used to reach nearby targets that are protected or concealed by intervening hills or other short-range barriers. It is transported by man, animal, parachute, or as unmounted vehicle armament.*

MORTAR, INFANTRY, SELF-PROPELLED. A muzzle-loaded weapon with either rifle or smooth bore mounted on a self-propelled vehicle, and fired at high angles of elevation. The bore diameter is less than 105 millimeters. It is designed for use as a mobile infantry weapon.*

mortar, 60 mm. See: **MORTAR, INFANTRY.***

mortar, 81 mm. See: **MORTAR, INFANTRY.***

motor. *Electrical.* A rotary machine which converts electrical energy into mechanical energy. May include integral gear unit. See also: **GEARCASE-MOTOR.***

motorboating. The emission by an audio system of pulsating audio sounds resembling the characteristic sound of a motorboat. These audio sounds are caused by feedback at audio-frequency in the amplifier or receiver.

motor carriage. See: carriage.

motor, general-purpose. *Elec.* Any motor of 200 hp or less, and 450 rpm or more, having continuous rating, and designed, listed or offered in standard ratings for use without restrictions to a particular application.

motorization. Process of equipping a military force with motor vehicles that provide a means of transportation only, as distinguished from 'mechanization' in which the unit both travels in, and fights from, its vehicles. Cf: **mechanize.**

motorize. To equip a military force with motor-driven vehicles. Cf: **mechanize.**

motorized artillery. Artillery drawn by truck or tractors, or self-propelled.

motor, multispeed. *Elec.* A motor which can be operated at any one of two or more definite speeds, each being practically independent of the load. For example, a direct-current motor with two armature windings, or an induction motor with windings capable of various pole groupings.

motor, rocket. See: **ROCKET MOTOR.**

motor starter. *Elec.* A variable resistance box connected in series with a motor for starting duty that protects electric motors from excessive current while they are reaching full speed. As the speed of the motor increases, the resistance is decreased until it is entirely cut out of circuit.

motor torpedo boat. Small vessel of great speed, armed with torpedoes, mines, and automatic weapons.

motor transport. Motor vehicles used for transporting military personnel, weapons, equipment, and supplies, excluding combat vehicles such as tanks, scout cars, and armored cars.

motor vehicle. Any wheeled-type, pneumatic-tired, self-propelled vehicle, designed and used for the transportation of supplies, personnel or equipment. This does not include bicycles or materials-handling equipment.

mount. 1. Structure supporting any apparatus, as a gun, searchlight, telescope, surveying instrument, etc.
2. To fasten in position, as a gun on its support.
3. To equip; put into operation; go into operation, as to mount an offensive.

mountain artillery. Light artillery that can be carried on pack horses or mules; artillery designed for use in mountainous country.

mount, flexible. In aircraft guns, a mount which for standardization purposes is arbitrarily defined as having a horizontal rigidity less than 250,000 pounds per inch horizontal deflection. Cf: **mount, rigid.**

MOUNT, GUN. An item designed to support a gun. Includes machine gun mounts. Excludes **MOUNT, RIFLE**; **MOUNT, MORTAR** and **MOUNT, HOWITZER.*** In vehicles, the assembly which consists of the cradle, recoil cylinders, rotor, elevating mechanism, and fire solenoids that hold the gun; in armored vehicles, the supporting and protective device for the armament which connects the armament to the hull and turret.

Tank and armored car guns are in practically all cases based on and carried by some portion of the hull walls. These mounts may be divided into three classes: (a) Turret mounts, (b) sponson mounts, and (c) ball mounts.

turret mount. Gun mount positioned in the turret of a tank or combat vehicle. Multiple gun turret mounts, for more than one gun, give improved control in tracking aerial targets and increased firepower, and are power driven.

sponson mount. Gun mount positioned on the sponson of a tank or combat vehicle. Practically abandoned on account of vulnerability and limited field of fire although widely used in earlier tanks.

ball mount. Gun mount used for mounting automatic small arms for use against personnel targets.

MOUNT, HOWITZER. An item designed to support a howitzer. Excludes **MOUNT, GUN**; **MOUNT, RIFLE** and **MOUNT, MORTAR.***

MOUNT, MORTAR. An item designed to support a mortar. Excludes **MOUNT, GUN**; **MOUNT, HOWITZER** and **MOUNT, RIFLE.***

MOUNT, OPTICAL SPOTTING INSTRUMENT.

A device having a rotatable table designed to accommodate a specific type of instrument. It has three detachable stakes which are used for securing the mount into the ground. With stakes removed, the assembly is operable from any smooth, level surface. Stake guides and mounting holes are provided in the base of the mount.*

MOUNT, RIFLE. An item designed to support a rifle. Excludes MOUNT, GUN; MOUNT, HOWITZER and MOUNT, MORTAR.*

mount, rigid. In aircraft guns, a mount which for standardization purposes is arbitrarily defined as having a horizontal rigidity of at least 250,000 pounds per inch horizontal deflection. Cf: **mount, flexible.**

mount, self-propelled. Motor vehicle on which a gun or launcher is permanently mounted.

MOUNT, TELESCOPE. A mechanical device designed to support and/or position a telescope. It may include one or more of the following: cross leveling device, means of bore-sighting a gun, azimuth and/or elevation, adjusting mechanism, and accommodations for attaching a LIGHT, INSTRUMENT.*

MOUNT, TRIPOD, WEAPON. An adjustable three-legged device with a central socket or head for the attachment of a pintle and cradle assembly which is usually composed of a spring type recoil mechanism, screw type elevating and traversing mechanism. This item may be mounted on a self-propelled vehicle. Excludes MOUNT, GUN; MOUNT, HOWITZER and MOUNT, RIFLE.*

Mouse. A particular satellite vehicle, named for 'Minimum Orbital Unmanned Satellite of the Earth.'

mouth plug. Plug which seals the mouth of the cartridge case in separated ammunition. It may be made of various materials, such as cork, plastic, or cardboard.

movable slot. A slot that comes and goes according to the position of the auxiliary airfoil. See: **slot** (sense 2). Also called an 'automatic slot.'

moving-coil pickup. *Electroacoustics.* A phonograph pickup, the electric output of which results from the motion of a conductor or coil in a magnetic field.

moving target indication. A technique employed in radar sets which will allow target echoes to be displayed on the radar indicator oscilloscope if these echoes are from a moving target but will suppress or eliminate echoes returned by a fixed or stationary target. See: **indicator, moving target.**

moving target indicator. See: **indicator, moving target.**

MOX. An explosive mixture containing a high explosive, plus powdered metal and an oxidizing agent. Used in some anti-aircraft projectiles.

mph; MPH; m.p.h. (abbr). 'Miles per hour.'

MRL (abbr). 'Multiple rocket launcher.'

MSD (abbr). 'Minimum safe distance.'

msl (abbr). 'Missile.'

MT (abbr). 1. 'Mechanical time.' 2. 'Moving target indication.' 3. 'Megaton.'

MTF (abbr). 'Mechanical time fuze.'

MTI (abbr). 'Moving target indicator.'

mtr (abbr). 'Motor.'

Mt. Rainier Ordnance Depot. Ordnance Corps field installation, located at Tacoma, Washington.

MTSQ (abbr). 'Mechanical time and superquick.'

mud capping. Method of breaking up large rocks without drilling. A charge of high explosive is laid on the rock and covered with mud, then detonated.

muffler. Any of various devices to deaden the noise of escaping gases or vapors, as a hollow cylinder, or a tube filled with baffles, through which the exhaust gases of an internal combustion engine are passed. Also called 'silencer.'

multipaths. The several paths by which, owing to reflections, a radiated signal may reach the receiving antenna from the transmitter.

multiperforated. Referring to solid propellants, indicating that the propellant grain has more than one longitudinal perforation, for control of burning rate. One of the most common types has seven longitudinal perforations, one being central, and the remaining six being regularly located around the center.

multiple-address (instruction) code. *Electronic computers.* An instruction in general consists of a coded representation of the operation to be performed and of one or more addresses of words in storage. The instructions of a multiple-address code contain more than one address.

multiple anti-aircraft weapon. Anti-aircraft weapon provided with more than one firing unit or barrel assembly.

multiple gun. Group of guns emplaced and adjusted for firing as a unit; any group of guns mounted in one position and fired as a unit.

multiple stage rocket (or missile). See: **multistage rocket.**

multiple wall. Descriptive of a projectile or missile designed for antipersonnel effect, in which the wall consists of two or more layers.

multiplex. The simultaneous transmission of several functions over one link without loss of detail of each function, such as amplitude, frequency, phase, or wave shape.

Very high-speed commutation that would satisfy these conditions could, in special instances, be correctly classified as multiplexing. However, to prevent confusion, the term 'commutation' is still to be preferred whenever a switch is used.

MULTIPLEXER. An item designed to combine two or more simultaneous intelligence signals for transmission over a single transmission facility. Includes both time division and frequency division types or combinations thereof. Does not include the transmission facilities.*

multiplier. *Electronic computers.* A device which has two or more inputs and whose output is a representation of the product of the signed magnitudes represented by the input signals.

multipropellant. A rocket propellant consisting of two or more unmixed chemicals fed into the combustion

chamber separately. Cf: **bipropellant**; **monopropellant**.

multipurpose weapon. Weapon that can be used for a number of different purposes, such as against ground forces and against aircraft.

multisection charge. See: **charge**, **multisection**.

multispeed motor. See: **motor**, **multispeed**.

multistage rocket. A rocket or rocket missile having two or more thrust-producing units, each used for different stages of the rocket's flight. Normally, each unit of a multistage rocket is jettisoned when its fuel is consumed.

mun (*abbr.*). 'Munition.'

munition. (*mun*) Usually *pl.* 1. In a broad sense, any and all supplies and equipment required to conduct offensive or defensive war, including war machines, ammunition, transport, fuel, food, and clothing, but excluding personnel and excluding supplies and equipment for purposes other than for direct military operations. 2. In a restricted sense, **ordnance** (sense 1).

Munroe effect. The effect produced by a shaped charge. In Europe sometimes called 'Neumann effect.' When a liner is used, the effect is termed 'Mohaupt effect.' See also: **charge**, **shaped**; **Mohaupt effect**.

Muskegon Ordnance Plant. Ordnance Corps field installation, located at Muskegon, Michigan.

mustard gas. (H) See: **CHEMICAL AGENT**, **MUSTARD GAS**.

mustard gas, distilled. (HD) See: **CHEMICAL AGENT**, **MUSTARD, DISTILLED**.

mustard-lewisite. (HL) A mixture of mustard gas and lewisite, two of the blister gases. See: **CHEMICAL AGENT**, **LEWISITE**; **CHEMICAL AGENT**, **MUSTARD GAS**.

mustard, simulated. See: **CHEMICAL AGENT**, **MUSTARD, SIMULATED**.

mustard-T mixture. (HT) A mixture of mustard gas and agent T. Properties are similar to distilled mustard gas. See: **CHEMICAL AGENT**, **MUSTARD, DISTILLED**; **CHEMICAL AGENT**, **MUSTARD GAS**; **CHEMICAL AGENT**, **T**.

muzzle. The end of the barrel of a gun from which the bullet or projectile emerges.

muzzle bell. Bell-shaped, built-up section at the muzzle of some types of cannon.

muzzle blast. Sudden air pressure exerted at the muzzle of a weapon by the rush of hot gases and air on firing.

muzzle booster. A unit attached to the muzzle of a gun to divert a part of the blast pressure to help actuate the recoil mechanism and increase the rate of fire.

muzzle brake. (Also called a 'recoil brake.')

Device attached to the muzzle of a gun which utilizes escaping gases to reduce the effective recoil force of the gun tube on the carriage or mount. In some designs it eliminates or reduces muzzle flash.

muzzle burst. Explosion of a projectile at the muzzle of a weapon, or at a very short distance from the muzzle.

muzzle energy. Kinetic energy of the projectile as it emerges from the muzzle. This is a measure of the power of the weapon.

muzzle flash. Flame that appears at the muzzle of a gun when a projectile leaves the barrel.

muzzle preponderance. 1. Unbalance of the tipping parts of a weapon when the weight of the 'muzzle end' exerts a greater moment about the trunnions than does the weight of the 'breech end.' This unbalance may be corrected by an equilibrator. 2. The amount of the unbalanced moment.

muzzle sight. See: **front sight**.

muzzle velocity. (MV) See: **initial velocity**.

muzzle velocity error. The numerical difference between the corrections determined by application of meteorological data and other known variations and those determined at approximately the same time by registration, expressed in feet-per-second variations from standard muzzle velocity. It is assumed to represent the difference between firing table muzzle velocity and developed muzzle velocity.

muzzle wave. Compression wave or reaction of the air in front of the muzzle of a weapon immediately after firing. Caused by **muzzle blast**.

MV (*abbr.*). 'Muzzle velocity.'

N

NAC (*abbr.*). 'National agency check.'

NAD (*abbr.*). 'Naval ammunition depot.'

nadir. A point on the celestial sphere 180 degrees from the zenith, i.e., directly beneath the observer.

napalm. (NP) 1. Aluminum soap in powder form, used to gelatinize oil or gasoline for use in napalm bombs or flame throwers. 2. The resultant gelatinized substance. See also: **CHEMICAL AGENT, INCENDIARY OIL; THICKENER, INCENDIARY OIL.**

napalm bomb. See: **bomb, napalm.**

NASA (*abbr.*). 'National Aeronautics and Space Administration.'

NASC (*abbr.*). 'National Aeronautics and Space Council.'

National Aeronautics and Space Administration. (NASA) Federal agency with control of US space research except specific military projects.

National Aeronautics and Space Council. (NASC) Policy making agency for US space programs. Its chairman is the President.

national agency check. (NAC) Sometimes capitalized. A security check which consists of the investigation of the records kept on a particular person by such agencies as the Federal Bureau of Investigation.

National Science Foundation. (NSF) Civilian agency of the Federal Government established to encourage and finance basic scientific research and to help improve science teaching.

National Security Council. (NSC) Includes Cabinet members and Chairman of the Joint Chiefs of Staff and advises the President on all matters affecting national security.

Nativ. An experimental guided missile built by North American Aviation, Inc., for the Army.

NATO (*abbr.*). 'North Atlantic Treaty Organization.' (Pronounced as a word.)

natural frequency. The frequency at which a body vibrates, or will vibrate, as determined by the physical characteristics of the body.

nav (*abbr.*). 1. 'Naval; navy.' 2. 'Navigation.'

Navaglobe. A particular kind of long-distance navigation system using one or more omnidirectional radio ranges with the appropriate airborne equipment to furnish aircraft with automatic azimuth and direction-finding indications in respect to a range station.

Navaho. Name applied to an Air Force surface-to-surface long range supersonic strategic missile, the SM-64. It is powered by two ramjet engines.

Navajo Ordnance Depot. Ordnance Corps field installation, located near Flagstaff, Arizona.

navigation. (nav) The process of finding the position

of a vehicle, and directing it to reach a desired destination.

Navigation is inherently three-dimensional but is often reduced to two dimensions by projecting all positions, courses, and speeds upon the surface of the earth.

navigational coordinate. A quantity whose measurement serves to define a surface of position (or a line of position if one surface is already known) containing the vehicle.

navigation, celestial. Navigation by means of observations of celestial bodies. A system wherein a missile, suitably instrumented and containing all necessary guidance equipment, may follow a predetermined course in space with reference primarily to the relative positions of the missile and certain preselected celestial bodies. Determination of the vertical to the earth's surface may be necessary in addition.

navigation, Decca. See: **navigation, hyperbolic.**

navigation, gee. See: **navigation, hyperbolic.**

navigation, hyperbolic. A general method for determining lines of position by measuring the difference in distance of the navigator or navigating apparatus from two or more stations of known position. The difference in distance is determined by measuring the difference in time of arrival of signals transmitted from two or more stations. Although a great variety of signaling methods are theoretically possible, only radio waves are now commonly used in hyperbolic navigation. One system, using continuous wave signals, is known as **Decca**. **Loran** and **gee** are systems using signals transmitted as pulses. One transmitting station is the master station, with the other station or stations, separated from 75 miles to 1200 miles, being **slave stations**. The cycle of transmission always begins at the master station and signal travels out in all directions. The arrival of the master signal at the slave station 'triggers off' the slave which, in turn, transmits a signal. Points of constant difference in time of arrival of the two or more signals will fall on hyperbolas, with the transmitters at the foci. The accuracy of the line of position which can be established by the navigator or the navigating apparatus varies from 200 yards to 2 miles depending upon the distance of the observer or the receiver from the base line between stations and upon the type of system and equipment used. Although the navigator's equipment differs in details for **gee**, **Decca**, and **loran**, the fundamental characteristics are the same. In the **Decca** and **gee** systems, the master station operates in conjunction with two or more slave stations. In the **loran** system, the master station operates with one slave station. **Shoran** is a short-range system.

NAVOL TANK, TORPEDO. A tank forming part of a torpedo assemblage, provided for the storage of solution of hydrogen peroxide in water. Decomposition of the hydrogen peroxide furnishes the oxygen required to effect combustion of the fuel, alcohol.

NBS (*abbr.*). 'National Bureau of Standards.'

NC (*abbr.*). 'Nitrocellulose' (explosive).

near miss. The strike of an explosive missile, esp. of an aerial bomb, near but not on the object of attack, and usually close enough to it to cause effective damage.

Nebelwerfer. [German 'smoke thrower.'] A German ground mobile rocket launcher of WW II, having six chambers fired singly.

Nebraska Ordnance Plant. Ordnance Corps field installation, located at Wahoo, Nebraska.

neck, case. Cylindrical portion of cartridge case between mouth and shoulder.

needle valve. A type of valve used in certain carburetors consisting of a small plain or threaded rod having a conical or tapered point, operated within a jet to vary the flow of fuel through the jet.

need-to-know. A criterion used in securing procedures that requires a person requesting classified information to establish his need to know such information in terms of his mission.

negotiated contract. A purchase or sales agreement made by a Government agency without normally employing techniques required by formal advertising.

nerve gas. Chemical agent (war gas) which is absorbed into the body by breathing, by ingestion, or through the skin, and affects the nervous and respiratory systems and various body functions. Examples: **soman**; **tabun**; **CHEMICAL AGENT, ISOPROPYL METHYLPHOSPHONOFUORIDATE** (**sarin**). (See separate entries.)

NETWORK, PULSE FORMING. A grouping of two or more different items such as resistors, coils, and capacitors, electrically connected and used to shape the leading and/or trailing edge of a pulse. See also: **ATTENUATOR** (as modified); **FILTER** (as modified); and **transformer**.*

NETWORK, SUMMATION. A grouping of resistive and/or reactive elements, such as resistors, capacitors, and inductors, electrically connected and designed to sum two or more sources of data and combine into a single input for a computer or other electrical or electronic equipment.*

Neumann effect. Term sometimes used by Europeans for the more common British-American term of **Munroe effect** (which see).

neutral burning. See: **neutral granulation**.

neutral granulation. Propellant granulation in which the surface area of a grain remains constant during burning. The burning of a propellant with neutral granulation is termed 'neutral burning.' Cf: **degressive granulation**; **progressive granulation**.

neutralization fire. Fire which is delivered to cause casualties, to hamper and interrupt the firing of

weapons, movement, or action and to reduce the combat efficiency of enemy personnel.

neutralize. 1. To destroy or reduce the effectiveness of enemy personnel and materiel by gunfire, bombing or any other means. 2. To make a toxic chemical agent harmless by chemical action. See: **decontamination**.

neutral oil. See: **oil, neutral**.

neutron. A particle which is one of the constituents of an atomic nucleus in most elements, having no electric charge.

Neutrons are released as radiation in the atomic disintegration of certain elements, and because they are uncharged they serve as particles with which to bombard the atomic nuclei of fissionable matter.

neutron bombardment. The bombardment of atomic nuclei by neutrons, esp. so as to produce nuclear fission.

New River Ordnance Plant. Ordnance Corps field installation, located at Radford, Virginia. A sub-installation of Radford Arsenal.

Newton's rings. A series of concentric colored or bright and dark circles seen when positive and negative surfaces of nearly the same curvature are pressed together. It is caused by interference of light rays. It is used to test lenses. The more nearly the surfaces are matched, the greater the distance between the rings and the larger the circles.

New York Ordnance District. One of the eleven districts into which the United States is divided for purposes of industrial mobilization, procurement, contract negotiation and administration, etc., by the Ordnance Corps. Embraces the State of New York; and the counties of Monmouth, Middlesex, Somerset, and Hunterdon, and all counties north thereof in the State of New Jersey. The main office is located in New York City.

NG (*abbr.*). 'Nitroglycerin' (explosive).

NH (*abbr.*). 'Nonhygroscopic.'

NH propellant. A propellant which, by reason of its formulation or method of manufacture, does not absorb moisture from the air. See: **nonhygroscopic**.

Nike. Name applied to a system of Army surface-to-air guided missiles designed to seek out, intercept, and destroy enemy aircraft. Several weapons of the Nike system are Nike-Ajax, Nike-Hercules, and Nike-Zeus. The Nike-Ajax has a range of approximately 25 miles, a speed of mach 2, is liquid-fueled and rocket-boosted, with radar beam rider guidance. The Nike-Hercules has a range of approximately 70 miles, a speed of over mach 3, nuclear warhead capability, employs solid fuel and command radar guidance. The Nike-Zeus is an interceptor missile using liquid fuel and radar guidance.

NIR (*abbr.*). 'Nose fuze impact rocket.'

Niskarjuna Ordnance Modification Plant. Ordnance Corps field installation, located at Schenectady, New York.

NITRIC ACID, GUIDED MISSILE. A chemical

- manufactured specifically for use in guided missiles, which must contain a minimum by weight of 0.5 percent hydrofluoric acid inhibitor and 13 percent nitrogen dioxide. Excludes NITRIC ACID, ACS; NITRIC ACID, ANALYZED REAGENT; NITRIC ACID, FUMING, ACS; NITRIC ACID, FUMING, TECHNICAL; NITRIC ACID, REAGENT and NITRIC ACID, TECHNICAL.*
- nitriding.** A process of case-hardening steel by causing the surface to absorb nitrogen. It is usually done by heating the steel in ammonia gas at 500° to 550° C.
- nitrocellulose.** (NC) Cellulose nitrate. An explosive used in the manufacture of smokeless propellants. Formed by the action of a mixture of nitric and sulfuric acids on cotton or some other form of cellulose. Guncotton is a nitrocellulose that has a very high nitrogen content.
- nitrocellulose propellant.** A single base propellant whose main constituent is nitrocellulose, with only minor percentages of additives, for stabilizing, etc. See: **propellant.**
- nitrocotton.** See: **guncotton.**
- nitrogen mustard gas.** (HN) See: **CHEMICAL AGENT, NITROGEN MUSTARD GAS.**
- nitroglycerin.** (NG) Nitrated ester of glycerol in which the OH radicals are replaced by NO₂. A colorless liquid at ordinary temperatures. Very powerful and sensitive high explosive; used in dynamites and in some propellant mixtures. See also: **DYNAMITE; propellant.**
- nitroguanidine.** Picrite, a colorless crystalline compound. One of the principal constituents of triple base propellants. The other two principal constituents are nitrocellulose and nitroglycerin. The nitroguanidine is present in the nitrocellulose-nitroglycerin colloid as a finely dispersed crystalline solid. The nitroguanidine contributes to the potential and helps in reducing muzzle flash.
- nitromethane.** A liquid compound, CH₃NO₂, oily and colorless, used as a monopropellant (which see) for rockets.
- nitrostarch.** Explosive used in some blasting compositions. It has been used during emergencies as a substitute for TNT. Manufactured from starch by nitration.
- NM (abbr).** 'Nonmetallic.'
- nodal point.** See: **node.**
- node.** 1. *Optics.* One of the two points on the optical axis of the lens, or system of lenses, such that a ray emergent from the second point is parallel to the ray incident at the first. 2. *Physics.* A line, point, or surface of a vibrating body which is free or relatively free from vibration. 3. *Electricity and electronics.* a. A point on a conductor at which there is zero voltage or zero current. b. A point in a radio wave or the like where amplitude is zero.
- noise.** Unwanted sound or disturbances found in or introduced into a communication system, or appearing on a radar scope.
Crosstalk, grass, and clutter are forms of noise.
- Minimum noise is caused by input of power impedance; other noise may be caused by atmospheric conditions, electronic circuit components, etc.
- noise level.** The strength of noise signals at a particular point in the electrical or electronic circuit; usually expressed in microvolts or in decibels with respect to some arbitrary level such as signal voltage or power.
- noise reduction.** *Electroacoustics.* In photographic recording and reproducing, a process whereby the average transmission of the sound track of the print (averaged across the track) is decreased for signals of low level and increased for signals of high level.
Since the ground noise introduced by the sound track is less at low transmission, this process reduces film noise during soft passages. The effect is normally accomplished automatically.
- NOL (abbr).** 'Naval Ordnance Laboratory.'
- nolo flight.** A term sometimes applied to the flight of a drone aircraft without a human pilot aboard.
- nomen (abbr).** 'Nomenclature.'
- nomenclature.** (nomen) The identifying name of materiel. Example: CARTRIDGE, 81 MILLIMETER: HE M43A1.
In the above example 'CARTRIDGE' is the **basic name**, while 'CARTRIDGE, 81 MILLIMETER' is the **item name**, and 'M43A1' is the **Ordnance type designator**. See separate entries.
- nomenclature plate.** Plate, usually made of metal, which is conspicuously mounted on equipment, giving model letters, symbols and numbers, together with other pertinent information.
- nominal size.** Size used for purposes of general identification. The basic size of a part will be approximately the same as the nominal size but need not be exactly the same. For example, a rod may be referred to as ¼ inch, although the actual dimension on the drawing is .2495 inch. In this case ¼ inch is the nominal size.
- nonatmospheric control.** Any device or system designed or set up to control a guided rocket missile, rocket craft, or the like outside the atmosphere or in regions where the atmosphere is of such tenuity that it will not affect aerodynamic controls; the control provided by such devices or systems.
Some of the systems used to accomplish non-atmospheric control incorporate vanes or fins directly in the jet stream; others are based on the swiveling or gimbaling of the entire rocket motor or the use of exhaust ports to direct the exhaust in such a manner as to change the course.
- nonboresafe.** Term applied to a fuze or booster that does not include a safety device to prevent the explosion of the main charge of a projectile prematurely, while it is still in the bore of the gun. See also: **fuze safety.**
- noncombat vehicle.** Unofficial term, sometimes used to distinguish a vehicle which is not classed as a **combat vehicle** (which see); that is, it is without means for engaging in combat.
- nondelay fuze.** See: **fuze, nondelay.**

nonelectric. Indicates, in the case of blasting caps, that functioning is initiated by means other than electric, e.g., by FUSE, BLASTING, TIME.

nonexpendable. Of a supply item or piece of equipment: That is not consumed in use and does not lose its identity in use, as a weapon, vehicle, machine, tool, piece of furniture, or instrument.

nonflammable. Not flammable.

nonfrag (*abbr.*). 'Nonfragmenting.'

nonhygroscopic. (NH) Not capable of absorbing moisture from the air. Used especially in regard to smokeless propellants.

nonhypergolic. Not capable of igniting spontaneously upon contact. Used especially with reference to rocket fuels. Cf: **hypergolic**.

noninitiating high explosive. See: **secondary high explosive**.

nonlinear distortion. *Electroacoustics.* Distortion caused by a deviation from a desired linear relationship between specified measures of the output and input of a system.
The related measures need not be output and input values of the same quantity; e.g., in a linear detector, the desired relation is between the output signal voltage and the input modulation envelope.

nonpersistent war gas. Chemical agent (war gas) normally effective in the open 10 minutes or less at the point of dispersion. Cf: **persistent war gas**; see also: **war gas**.

nonplanar network. A network which cannot be drawn on a plane without crossing of branches.

nonstandard. (NS) Differing from specifications, conditions, or procedures that have been prescribed or established. Weather conditions different from those assumed in firing tables, for instance, are nonstandard.

nonsystematic error. See: **accidental error**.

Norden bombsight. [Named for its developer, C. L. Norden, 1880- , a US aeronautical consultant.] A gyroscopically-stabilized synchronizing bombsight used mainly for synchronous bombing but useful for fixed-angle bombing.
Utilizing preset data and manual operation by the bombardier, the Norden bombsight computes the correct dropping angle and, in connection with an automatic pilot or pilot direction indicator, determines the proper course of the aircraft required to maintain the necessary line of sight to the target.

Nordenfeld breechblock. See: **breechblock, eccentric-screw (Nordenfeld)**.

norm (*abbr.*). 'Normal.'

normal acceleration. See: **acceleration, normal**.

normal aiming error. In bombing, an aiming error that falls within the boundary for gross errors.

normal axis. The vertical axis of an aircraft or missile. See: **axes of an aircraft**.

normal charge. See: **charge, normal**.

normal impact. Impact on a plane perpendicular to the trajectory; striking of a projectile against a surface

that is perpendicular to the line of flight of the projectile.

normal maintenance. *Ammunition.* Maintenance that does not involve the disassembly of ammunition or replacement of components, but that work performed to prevent deterioration of exterior surfaces of individual items and/or packages of ammunition components.

North Atlantic Treaty Organization. (NATO) An organization of several nations in a treaty alliance for collective defense and preservation of peace and security against aggression, organized in 1949. Signatory nations were the United States, Great Britain, France, Canada, Italy, Belgium, Luxembourg, the Netherlands, Norway, Denmark, Portugal, Iceland. Nations admitted after original ratification of the treaty were Greece, Turkey, the Federal Republic of Germany.

nose. The foremost point or section of a bomb, missile, or the like. Indicates, in the case of fuze nomenclature, that item is to be attached to the nose of the munition for which intended; and, in the case of the component of a fuze, that the component is to be used with a nose fuze.

NOSE ASSEMBLY, TORPEDO. An item attached to the front of a torpedo warhead designed to contain hydrophones or transducer electronic circuits, and other equipment necessary for acoustic control.*

nose cone. Protective ballistic case for the nose section of a missile or rocket.

nose drag. See: **drag, nose**.

nose fuze. See: **fuze, nose**.

nose-heavy. The condition of an airframe in which the nose tends to sink when the longitudinal control is released in any attitude of normal flight.

nose spray. Fragments of a bursting projectile that are thrown forward in the line of flight, in contrast to base spray, thrown to the rear, and side spray, thrown to the side.

NOTS (*abbr.*). 'Naval Ordnance Test Station.'

nozzle. A duct through which a liquid or gas is directed, designed to increase the velocity of the liquid or gas; *specif.*, a jet nozzle for a jet engine or rocket.

NP (*abbr.*). 1. 'Napalm-incendiary oil mixture.' 2. Thickener, M1 ('napalm'). 3. 'Dummy nose plug.'

NPG (*abbr.*). 'Naval Proving Ground.'

NRL (*abbr.*). 'Naval Research Laboratory.'

NS (*abbr.*). 'Nonstandard.'

NSC (*abbr.*). 'National Security Council.'

NSD (*abbr.*). 'Nonself-destroying.'

NSF (*abbr.*). 'National Science Foundation.'

NSP (*abbr.*). 'Nose shipping plug.'

N-terminal network. A network with n accessible terminals.

N-terminal pair network. A network with $2n$ accessible terminals grouped in pairs. In such a network one terminal of each pair may coincide with a network node.

nuclear. 1. Of or pertaining to a nucleus, especially to the nucleus of an atom. 2. Of or pertaining to the fission or fusion of an atomic nucleus. See also: **fission, nuclear; fusion, nuclear.**

nuclear bomb. See: **bomb, nuclear.**

nuclear energy. Energy held within the nucleus of an atom, released in part in certain isotopes by the process of fission, or in certain other elements by the process of nuclear fusion; *restrictive*, that part of this energy that is released by fission or fusion.

In nuclear fission, the energy released comes from the atomic nucleus being split, resulting in the emission of nuclear particles, such as neutrons, the alpha particle, or the beta particle. In nuclear fusion, the combining atomic nuclei fail to utilize their entire atomic mass in forming the new nucleus, the unused mass being converted into energy.

nuclear fission. See: **fission, nuclear.**

nuclear fusion. See: **fusion, nuclear.**

nuclear propulsion. Propulsion by means of nuclear energy.

Nuclear propulsion utilizes atomic, or nuclear, energy to provide heat, which in turn is converted, in one way or another, to mechanical energy. Instances of this propulsion are in the submarines, such as the Nautilus and the Sea Wolf.

nuclear radiation. The radiation of neutrons, gamma particles, and other particles from an atomic nucleus, resulting from nuclear fission or from the escape of particles in the process of nuclear fusion.

nuclear reactor. An assembly of radioactive material at critical mass together with certain other materials, used to produce other elements or isotopes or to generate heat. A nuclear reactor is also called an 'atomic pile,' or 'nuclear pile.' See: **pile.**

nuclear rocket. A rocket propelled by reaction to released nuclear energy.

nuclear warhead. A warhead that contains fissionable or fissionable-fusionable material.

nuclear weapon. A bomb, projectile, missile, or the like that carries a nuclear warhead.

null. *Electricity and electronics.* Zero.

nulling. The accurate adjustment of different input-voltages in electro-mechanical directors so that the indicated voltages represent correct distances in yards.

number. (no.) *Electronic computers.* Formally an abstract mathematical entity defined by the rules governing the relations and operations to which it is susceptible. In this sense, a number is independent of the manner of its representation. Commonly a representation of a number as defined above, such as a 'binary number,' or a 'decimal number,' or a sequence of pulses. In a digital machine, a word composed only of digits and possibly a sign.

number, random. *Electronic computers.* A set of digits constructed of such a sequence that each successive digit is equally likely to be any of n digits to the base n of the number.

nutation. 1. The oscillation of the axis of a rotating body such as a spinning projectile. 2. In radar, the situation where, with the radar reflector stationary, the center of the dipole, which has its longitudinal axis fixed, is caused to describe a circle centered at the focus of the paraboloid and lying in a plane perpendicular to the axis of the paraboloid.

NUT, FIN LOCK, BOMB. A nut, circular in shape, with holding or tightening features; designed to position and hold a FIN ASSEMBLY, BOMB to a bomb.*

- secant ogive may have any radius of curvature greater than that of the tangent ogive up to an infinite radius of curvature (i.e., a straight, conical ogive); but, unless otherwise specified, a secant ogive has approximately twice the radius of curvature of a tangent ogive. Called 'fractional ogive' by the British. See also: ogive; ogive, tangent.
- ogive, tangent.** Ogive generated by arc, tangent to segment forming the cylindrical surface. Called 'true ogive' by the British. See: ogive.
- oil bath.** 1. Oil, in a container, within which a mechanism works, or into which it dips. 2. Oil in which a piece of apparatus is submerged. 3. Oil used in tempering. 4. Oil poured on a cutting tool.
- oil buffer.** A mechanism on certain types of automatic weapons, especially the caliber .50 guns, for absorbing the shock of recoil and regulating the speed of firing.
- oil detergent.** See: detergent oils.
- oil-dilution valve.** A valve used to mix gasoline with engine oil to permit easier starting of the gasoline engine in cold weather.
- oil filter.** See: filter, oil.
- oil gear.** An electromechanical device utilizing hydraulic principles to convert electrical data signals into power drive.
- oil groove.** A groove running part way round the inside of a bearing from the oilhole to distribute lubricating oil to the journal.
- oilhole.** A hole for conducting oil, as from an oil cup, to a bearing.
- oiliness.** The ability of an oil to 'stay slippery' under difficult operating conditions; the characteristic of a lubricant that makes it cling or adhere to surfaces; the property that causes a difference in the friction when lubricants of the same viscosity at the same temperature and pressure of the film are used with different bearings. It is a phenomenon that becomes strongly evident only when the oil film separating rubbing surfaces is exceedingly thin. In films of molecular dimensions, viscosity effects are negligible although oiliness has a marked bearing.
- oil, lubricating, engine, automotive and diesel.** See: LUBRICATING OIL, INTERNAL COMBUSTION ENGINE.*
- oil, magnetic, inspection.** See: MAGNETIC INSPECTION OIL.*
- oil, neutral.** 1. Any of the oils carrying paraffin which are obtained by the steam-distillation of paraffin-base petroleum after the second-grade illuminating oil has been run off. Neutral oil carrying paraffin is known as 'wax distillate.' 2. Any of the lubricants of medium viscosity and fire test, usually filtered, and obtained by the reduction of pressed distillate from wax oil or wax distillate.
- oil pan.** The lower section of the crankcase used as a lubricating-oil reservoir on an engine.
- oil pump.** *Automotive.* Oil pumps are of the gear, vane, or plunger type. They are usually an integral part of the engine. Their purpose is to lift oil from the sump to the upper level in the splash and circulating systems, and in forced-feed lubrication they pump the oil to the tubes leading to the bearings and other parts.
- oil ring.** 1. A ring located at the lower part of a piston to prevent an excess amount of oil from being drawn up onto the piston during the suction stroke. 2. A ring on a journal, dipping in an oil bath for lubrication.
- oil seal.** 1. A device for preventing the entrance or return of oil from a chamber. 2. A device using oil as the sealing medium to prevent the passage of fluid from one chamber to another.
- oil-temperature regulator.** See: regulator, oil-temperature.
- Oklahoma Ordnance Works.** Ordnance Corps field installation, located at Pryor, Oklahoma. A sub-installation of Kansas Ordnance Plant.
- omnibearing.** A bearing toward an omnidirectional radio-range station, as given to an aircraft by the omnidirectional radio range.
- omnibearing-distance navigation.** Radio navigation utilizing a polar-coordinate system as reference, making use of omnibearing-distance facilities.
- omnibearing indicator.** An instrument that continually indicates a bearing toward a VHF omnidirectional radio-range station.
- OMRO (abbr).** 'Ordnance Materials Research Office.'
- on-carriage equipment.** Items of supply which, although not part of the cannon carriage proper, are mounted on the carriage and remain in their respective mounts, brackets, or containers on the carriage when it is being towed. These items are required for organizational maintenance and to provide the fire control necessary for laying the piece. Examples: rammer staves, handspikes.
- on-carriage fire control.** Process of controlling fire on a target with the aid of a sighting device mounted directly on the weapon. Cf: off-carriage fire control.
- on-carriage fire control equipment.** Fire control items, such as telescope mounts, which are built into the cannon carriage or mount, or which are carried on the carriage or mount in the traveling position. Cf: off-carriage fire control equipment.
- one and a half stage missile.** A ballistic missile which stages part of the booster system but retains the basic tankage and other equipment. The main feature is that the sustainer engine is started on the ground (in contrast to a two stage missile).
- one-dimensional flow.** See: flow, one-dimensional.
- one hundred degree centigrade heat test.** See: heat tests.
- one hundred percent rectangle.** See: hundred-percent rectangle.
- on-line operation.** *Electronic computers.* A type of system application in which the input data to the system is fed directly from the measuring devices and the computer results obtained during the process

of the event; e.g., a computer receives data from wind tunnel measurements during a run, and the computations of dependent variables are performed during the run enabling a change in the conditions so as to produce particularly desirable results.

ONR (abbr). 'Office of Naval Research.'

on the way. Expression sent over communication system from firing position to observation position when weapon is fired, thus warning the observers to be on the alert for spotting the impact.

on-vehicle materiel. Items of supply which, although not part of the vehicle proper, are issued with, and carried on, ordnance or other technical service vehicles. They are required for vehicular maintenance, armament, fire protection, communication, etc., and to complete the major combination. Examples: guns, gun mounts, radios, flashlights, fire extinguishers, sighting and fire control equipment, specified vehicular spare parts and tools for maintenance of the vehicle and weapons.

OOR (abbr). 'Office of Ordnance Research.'

OP (abbr). 1. 'Observation post.' 2. Navy, 'Ordnance Pamphlet.'

opacifier. A substance used to treat a solid rocket propellant so as to absorb light and heat and thus protect the propellant from deterioration until ready for use.

open ammunition space. Ground area prepared or improvised for storage of ammunition in open areas to supplement magazine space.

open-end contract. Agreement for the supply of goods or services which contains no or varying limits of time and quantity and which usually involves recurring orders and charges in varying degree.

open sight. A rear gunsight having a notch. Distinguished esp. from a peep sight.

open storage. The storage of certain materiel outdoors; the materiel so stored.

operand. *Electronic computers.* A word on which an operation is to be performed.

operating characteristic curve. (OC) A graph of the probability of acceptance of material containing defective items, depending upon the sample size and percentage of defective items. The number of items being sampled is not considered, since it is always a large number, and is treated as being infinite.

operating handle. Handle or bar with which the operating lever of a gun is operated to open and close the breech of the gun.

operating lever. Lever device on a gun with which the breech of the gun is opened and closed.

operating maintenance. Service and repair to vehicles and other equipment. Operating maintenance differs from scheduled maintenance, which consists of the regular servicing and repair of equipment according to a time schedule or on a mileage basis. Also called 'march maintenance.'

operating slide. Mechanism in a Browning machine gun that permits opening the breech for loading,

unloading, and clearing out stoppages, and closing the breech for firing.

operation. *Electronic computers.* 1. The activity resulting from an instruction. 2. The execution of a set of commands.

operational. When used in connection with equipment such as aircraft, vehicles, etc., indicates the equipment is in such a state of repair as to be immediately usable.

operational research. See: operations research.

operation, complete. *Electronic computers.* An operation which includes (a) obtaining all operands from storage, (b) performing the operation, (c) returning resulting operands to storage, and (d) obtaining the next instruction.

operation, computer. *Electronic computers.* The electronic action of hardware resulting from an instruction; in general, computer manipulation required to secure computed results.

operations analysis. See: operations research.

operations evaluations. See: operations research.

operations research. Scientific, qualitative, and quantitative study of warfare by military agencies with the objective of improving the weapons, tactics, and strategy of future operations through analysis and evaluation of past operations and maneuvers, and operations trials. Also known as operational research, operations analysis, and operations evaluations.

OPM (abbr). 'Ordnance Proof Manual.'

opportunity fire. Fire delivered upon a target of opportunity.

opposed engine. An internal combustion, reciprocating engine having the pistons on opposite sides of the crankshaft, with the piston strokes on each side working in a direction opposite to the direction of the strokes on the other side.

opt (abbr). 'Optical.'

optical (opt) 1. Pertaining to instruments having specially ground lenses and used with the eye, as in 'optical sight.' 2. Pertaining to actions in which optical instruments are used, as in 'optical bombing.'

optical axis. The line formed by the coinciding principal axes of a series of optical elements comprising an optical system; in other words, an imaginary line passing through the optical center of the system.

optical center. The point of a lens through which the rays pass and emerge parallel to their path of incidence. It is the thickest part of a converging (convex) lens and the thinnest part of a diverging (concave) lens.

optical element. A part of an optical instrument which acts upon the light passing through the instrument, such as a lens, prism, or mirror.

OPTICAL FLAT. A flat, transparent piece of glass, generally of fused quartz, with one or both principal surfaces polished to within a few millionths of an inch of a true plane, used in conjunction with a monochromatic light source to measure the flatness

of precision finished surfaces, and to determine the distance and parallelism between precision finished surfaces by comparison with known standards. In operation the flat is superimposed, reference surface downward, on the parts under test and when illuminated by monochromatic light the rays reflected from the reference surface are either reinforced or neutralized by the rays reflected from the surface under test producing interference bands which reveal any variations in the thickness of the film of air between surface under test and the flat. Excludes optical parallels.*

optical glass. Glass carefully manufactured to obtain purity, transparency, homogeneity, and correct optical properties. See: **crow glass**; **flint glass**.

optical instrument. A measuring, sighting, indicating, or computing device, the operation of which is based upon the properties of light. Examples: telescope, microscope, transit, spectroscope, sextant, range finder.

optical sight. A sight with lenses, prisms, or mirrors that is used in laying weapons, for aerial bombing, or for surveying.

optical surface. A reflecting or refracting surface.

optical system. A number of lenses, or lenses and prisms, so arranged as to refract, or refract and reflect light, to perform some definite optical function.

optimization. The approach to economically perfect design or operation, accomplished primarily by analytical rather than 'hit or miss' methods.

optimum charge. Propelling charge with web and propellant weight combination which produces maximum velocity at a specified pressure.

orbit. 1. The path described by a body in its revolution about another body, as by a planet about the sun or by a manmade satellite about the earth. 2. To revolve about another body.

orbit, closed. A circle or ellipse in a central force field (invariant elements).

orbit, open. Circle or ellipse in a perturbed field (with changing elements).

ord (abbr). 'Ordnance.'

ORDAB. Official symbol for Army Ballistic Missile Agency.

ORDBA. Official symbol for Frankford Arsenal.

ORDBB. Official symbol for Picatinny Arsenal.

ORDBC. Official symbol for Rock Island Arsenal.

ORDBD. Official symbol for Springfield Armory.

ORDBE. Official symbol for Watertown Arsenal.

ORDBF. Official symbol for Watervliet Arsenal.

ORDBG. Official symbol for Aberdeen Proving Ground.

ORDBS. Official symbol for White Sands Missile Range.

OrdC (abbr). 'Ordnance Corps.'

ORDDW. Official symbol for Redstone Arsenal.

ORDEA. Official symbol for Birmingham Ordnance District.

ORDEB. Official symbol for Boston Ordnance District.

ORDEC. Official symbol for Chicago Ordnance District.

ORDED. Official symbol for Cincinnati Ordnance District.

ORDEE. Official symbol for Cleveland Ordnance District.

ORDEF. Official symbol for Detroit Ordnance District.

ORDEH. Official symbol for New York Ordnance District.

ORDEI. Official symbol for Philadelphia Ordnance District.

ORDEL. Official symbol for San Francisco Ordnance District.

ORDEM. Official symbol for St. Louis Ordnance District.

order. *Electronic computers.* See: **instruction.**

ORDES. Official symbol for Los Angeles Ordnance District.

ORDGB. Official symbol for Ordnance Board.

ordinate. 1. One of the coordinates of a point. 2. The distance of a point of the trajectory from the plane of site. The maximum ordinate is the highest point of the trajectory.

ORDLY. Official symbol for Ordnance Ammunition Command.

ORDMC. Official symbol for Ordnance Tank-Automotive Command.

ORDMX. Official symbol for Detroit Arsenal.

ordnance. (ord) 1. Military materiel, such as combat weapons of all kinds, with ammunition and equipment for their use, vehicles, and repair tools and machinery. 2. *Capitalized.* a. The Ordnance Corps (which see) of the U. S. Army. b. An organization or activity that stores, issues, or maintains ordnance materiel, as in "Ordnance will repair the division artillery."

Ordnance Ammunition Command. (OAC) Field command of the Ordnance Corps located at Joliet Arsenal, Joliet, Illinois, charged with responsibility for procurement and associated activities of end items of ammunition; it directs the operation of a number of Government owned ordnance plants.

ordnance automotive test program. A single test program consolidating all the tests normally required in the research or development testing of an Ordnance motor vehicle and the methods of test. In general, automotive tests include the determination of the capabilities and limitations of the vehicle or component thereof under test. These tests may be classified as development, research, or miscellaneous tests.

Ordnance Board. Agency of the Chief of Ordnance to service test items of material considered for adoption by Ordnance field units, maintenance shops and such activities. Also makes special studies and advises the Chief of Ordnance concerning long range

organizational planning and policies. Located at Aberdeen Proving Ground, Maryland.

Ordnance Corps. (OrdC) A technical service of the U. S. Army, charged with the design, construction, testing, and supply of ordnance materiel. The Ordnance Corps provides guns, ammunition, missiles, armored and tracklaying vehicles, apparatus for sighting and firing guns. It maintains arsenals and depots for the design, manufacture, testing, storage, and issue of such materiel; it also maintains an extensive research program.

ordnance depot. A depot which contains reserve stocks of arms, ammunition, and equipment furnished by the Ordnance Corps.

Ordnance drawing number. A number assigned by the Ordnance Corps for the identification of an Ordnance drawing.

Ordnance Field Safety Office. Ordnance Corps field installation, located at Jeffersonville, Indiana.

Ordnance Guided Missile School. Ordnance Corps field installation, located at Redstone Arsenal, Huntsville, Alabama.

ordnance materiel. Weapons of all types, ammunition, fire-control instruments, and other articles for whose design, storage, and issue the Ordnance Corps is responsible.

Ordnance Missile Command. Short for U. S. Army Ordnance Missile Command (which see).

ordnance motor book. Called 'log book.' A book issued with each ordnance motor vehicle, in which an accurate record must be kept of performance and maintenance of each motor vehicle issued by the Ordnance Corps, and which must accompany the vehicle at all times.

ordnance officer. 1. Officer who is a member of the Ordnance Corps. 2. Special staff officer who advises his commander on technical matters of ordnance. In this meaning, also called ordnance staff officer. 3. Officer having responsibilities dealing with ordnance maintenance, ammunition, and general supply, including that of placing captured enemy materiel into usable condition.

Ordnance part number. A part number assigned to an Ordnance item for Ordnance Corps engineering purposes.

ordnance plan. Detailed statement on ordnance operations prepared for a commander, usually by his ordnance officer. An ordnance plan includes specific instructions for the use of ordnance units. It deals with ordnance maintenance, ammunition, and general supply, and the putting of captured materiel into usable condition.

Ordnance Proof Manual. (OPM) A manual whose purpose is to simplify, codify, and standardize proof technique and to provide a guide for those who plan, execute, or analyze proof work on ordnance materiel. The manual includes a discussion, in detail, of basic principles, related facts, and specific instructions relating to: 1. Classification of tests. 2. Examples of test programs on all classes or types of ordnance materiel. 3. Proof technique, including

the detail operation of proof facilities. 4. The methods of reductions of proof data, calculations performed, the evaluation of tests, and instructions for preparation of proof reports.

Ordnance Proprietary Rights Board. A board established by the Chief of Ordnance under OC Order 10-56 to determine whether to authorize the use of proprietary rights by Ordnance and recommend payment for the purchase of proprietary rights.

ordnance service. All activities necessary to maintain in usable condition the ordnance equipment of a command and such other equipment as directed by proper authority.

ordnance staff officer. See: ordnance officer, sense 2.

Ordnance Stock Number. A number that has been assigned by the Ordnance Corps for stock control of ordnance general supplies.

ordnance stores. All commodities and materials used by the Ordnance Corps in the design, manufacture, testing, preservation, and overhaul of ordnance property or supplies.

ordnance supplies. All military supplies assigned to the Ordnance Corps for storage, issue, and maintenance. Ordnance supplies consist of all raw materials, completely manufactured articles, and parts of such articles assigned to the Ordnance Corps.

Ordnance Tank-Automotive Command. (OTAC) Field command of the Ordnance Corps located at Detroit, Michigan. Charged with responsibility for development and procurement, and associated activities, of Ordnance materiel classified as tank-automotive vehicles. Also has responsibilities with respect to armor for vehicles and land locomotion problems. The command encompasses Detroit Arsenal and Lima Ordnance Depot.

Ordnance Technical Committee. Committee appointed by the Chief of Ordnance, with membership from the Ordnance Corps and other agencies of the Department of Defense who are interested in or users of Ordnance materiel. Primary purpose is to effect coordination within the Ordnance Corps and among the developing and using agencies during research, development, test, type classification, and procurement activities on Ordnance Corps materiel.

The Ordnance Technical Committee, formerly the Ordnance Committee, functions under the chairmanship of the Chief of the Ordnance Research and Development Division and is frequently called upon to act in an advisory capacity to the Chief of Ordnance. The Committee is called upon to consider and recommend action concerning such subjects as the establishment or termination of research or development projects, the priorities to be assigned to each, standardization of equipment, and the security classification to be assigned to the various items of Ordnance materiel. Actions of the Committee, consisting of formal and 'read-for-record' actions, are published and distributed by the Chief of Ordnance as Ordnance Technical Committee Minutes (OTCM). Similar committees also operate within the Army's other technical services.

- Ordnance Technical Intelligence Agency.** Ordnance Corps field installation, located at Arlington Hall Station, Arlington, Virginia.
- Ordnance Training Command.** (OTC) Ordnance Corps field command, located at Aberdeen Proving Ground, Maryland. Has overall responsibility for training of Ordnance personnel.
- ordnance troops.** Technically trained troops assigned or attached to a tactical unit to provide ordnance maintenance, supply, or technical service. They also give instruction in the use, maintenance, and adjustment of ordnance materiel.
- Ordnance type designator (model number, model designation).** Combination of letters and numbers assigned as part of the nomenclature (which see) for identification of Ordnance materiel, as applicable. In the nomenclature: ROCKET, HIGH EXPLOSIVE, 3.5 INCH: AT M28A2, the Ordnance type designator is *M28A2*.
- Ordnance Weapons Command.** (OWC) Field command of the Ordnance Corps located at Rock Island, Illinois. Charged with responsibility for development and procurement, and associated activities, of Ordnance materiel classified as field, antitank and anti-aircraft artillery, small arms weapons and attachments thereto. The command encompasses Rock Island Arsenal, Springfield Armory and Watertown Arsenal.
- ORDOR.** Official symbol for Office of Ordnance Research.
- ORDOW.** Official symbol for Ordnance Weapons Command.
- ORDP (abbr).** 'Ordnance Corps Pamphlet.'
- ORDTL.** Official symbol for Diamond Ordnance Fuze Laboratories.
- ORDXR.** Official symbol for Army Rocket and Guided Missile Agency.
- organizational maintenance.** That maintenance which a using organization performs on its own equipment. Organizational maintenance includes inspection, cleaning, servicing, preservation, lubrication, adjustment, minor repair not requiring detailed disassembly, and replacement of minor parts not requiring high technical skill. This type of maintenance was formerly divided into two parts, known as 'first-echelon maintenance' and 'second-echelon maintenance.' See: **maintenance**.
- orien (abbr).** 'Orientation.'
- orient.** 1. To relate a thing to something else. 2. To acquaint or familiarize a *person* with something. 3. To get one's bearings. Used reflexively.
- orientation.** (orien) The act or process of orienting or of being oriented.
- orienting point.** Distant object sighted on in aligning a director or other instrument with a gun.
- orifice.** 1. Any opening through which something passes, as in a hydraulic piston for the passage of fluid. 2. *Electronics.* An opening in a wave guide through which energy is transmitted.
- original master.** *Electroacoustics.* In disk recording, the master produced by electroforming from the face of a wax or lacquer recording. Also called 'metal master,' 'metal negative,' 'No. 1 master.'
- original package.** In storage operations, package containing the number of pieces directed to be packed together by procurement specifications or other packing schedules. A legend must show on the outside indicating the quantity and description of the contents and designation of the producer, and the original seals must be unbroken.
- origin of rifling.** The position in a rifled gun bore at which the rifling begins. More specifically, the plane, perpendicular to the axis of the gun bore, in which the rifling starts; the intersection of the forcing cone and the gun bore. See: **rifling**.
- origin of the trajectory.** Center of the muzzle of a gun at the instant when the projectile leaves it.
- orthoscopic eyepiece.** *Optics.* An eyepiece which has been corrected for distortion; particularly that type of eyepiece having a triple element cemented field lens and a meniscus eye lens. See: **eyepiece**.
- OSA (abbr).** 'Office of the Secretary of the Army.'
- OSAF (abbr).** 'Office of the Secretary of the Air Force.'
- OSB (abbr).** 'Ordnance Supply Bulletin.'
- oscillation, phugoid.** *Aerodynamics.* A long-period oscillation characteristic of the disturbed longitudinal motion of an aircraft.
- oscillation, stable.** An oscillation of constant amplitude or frequency.
- oscillation, unstable.** In aerodynamics, an oscillation whose amplitude increases continuously until an attitude is reached from which there is no tendency to return towards the original attitude, the motion becoming a steady divergence.
- oscillator.** *Electricity.* Any device for producing oscillations, such as a nonrotating device, normally incorporating a vacuum tube, that converts direct current into alternating current, or a device that sets up and maintains oscillation in a current. An oscillator may be used to produce audio-frequency current or radio-frequency current.
- OSCILLATOR, AUDIO FREQUENCY.** A device utilizing electron tubes, transistors or electromagnetic means to produce audio frequency voltages of 20 kilocycles and below, and whose frequency (often adjustable within a specified range) is generated and determined by its circuit constants. It is specifically designed for other than test and/or calibration purposes. See also: **GENERATOR, SIGNAL.***
- OSCILLATOR, AUDIO-RADIO FREQUENCY.** A device utilizing electron tubes, transistors or electromagnetic means to produce alternating voltages above and below 20 kilocycles per second, and whose frequency (often adjustable within a specified range) is generated and determined by its circuit constants. It is specifically designed for use other than test and/or calibrator purposes. See also: **GEN-**

ERATOR, SIGNAL and CALIBRATOR, FREQUENCY.*

oscillator, magnetostriction. An oscillator whose frequency is controlled by a magnetostrictive resonator.

OSCILLATOR, PULSE DELAY. A device utilizing electron tubes or transistors to produce alternating voltages whose frequency is determined by constants of its circuits. The duration is determined by a trigger pulse of predetermined width which is delayed in transmission for a definite time interval by a delay network in the input, output, or both input and output of the oscillator.*

OSCILLATOR, RADIO FREQUENCY. A device utilizing electron tubes, transistors, or electromagnetic means to produce alternating voltages above 20 kilocycles per second, and whose frequency (often adjustable within a specified range) is generated and determined by its circuit constants. It is specifically designed for use in other than test and/or calibrator purposes. See also: **GENERATOR, SIGNAL and CALIBRATOR, FREQUENCY.**

oscillogram. A record of the readings from an oscilloscope.

OSCILLOGRAPH. An item which makes a permanent visual record of values and variations in electrical voltage, and of quantities which can be converted into terms of electrical potential. For items that are not separable and operable when detached from equipment of which they are a part (built into operational end equipment). See also: **OSCILLOSCOPE.***

OSCILLOSCOPE. A test instrument which is designed to give visual indications on a cathode-ray tube of instantaneous values and variations in electrical voltage. It can also be used to indicate any quantity which can be converted into terms of electrical potential. May include an integral pulse generator, the output of which can be used to trigger an external component. May also be triggered by pulses from an external source. For items that are not separable and operable when detached from equipment of which they are a part (built into operational end equipment). See also: **OSCILLOGRAPH.***

OSD (abbr). 1. 'Office of the Secretary of Defense.'
2. 'Ordnance Supply Depot.'

OSN (abbr). 'Office of the Secretary of the Navy.'

OSR (abbr). 'Office of Scientific Research' of the Air Force.

Oswatitsch diffuser. See: diffuser, Oswatitsch or Ferri.

OTAC (abbr). 'Ordnance Tank-Automotive Command.'

OTC (abbr). 'Ordnance Training Command.'

OTCM (abbr). 'Ordnance Technical Committee Minutes.'

Otto cycle. A reciprocating internal combustion engine cycle characterized by constant-volume combustion, as distinguished from the Diesel cycle which is characterized by constant-pressure combustion.

outage. 1. The amount of a liquid or other bulk commodity lost in transportation or storage; also the amount of fuel used up in a fuel tank. 2. *Electricity.* Circuit outage.

out-of-line safety. A term descriptive of a method by which detonator safety or bore safety is attained. In the safe condition, one or more components of the fuze or booster explosive train are in a non-aligned condition with respect to the other components, so that normal functioning cannot occur. See also: **bore safety; detonator safety; fuze safety.**

output equipment. *Electronic computers.* The equipment used for obtaining information from a computer.

outrigger. Used mainly in anti-aircraft artillery. An outrigger might be called a form of trail in that it aids in stabilizing the weapon. The outriggers are hinged, allowing them to be folded either horizontally or vertically for traveling and extended in a horizontal plane when the mount is emplaced. Four outriggers are usually attached to each mobile gun mount.

over. A bomb or projectile hit beyond or past the target.

overall efficiency. The efficiency of a jet engine, rocket engine, or rocket motor in converting the total heat energy of its fuel first into available energy for the engine, then into effective driving energy.

Overall efficiency is expressed as a percentage of the total heat energy of the fuel. It is a product of thermal efficiency and propulsive efficiency.

overcast bombing. The bombing of a target through an overcast above the target, using radar or other equipment to aid in sighting through the overcast. Cf: **blind bombing.**

overdrive. A transmission gear which transmits to the propeller shaft a speed greater than the engine speed. It is equivalent to a four-speed transmission in which third speed is the direct drive and fourth speed a higher or faster ratio.

overgear. A gear train in which the angular velocity ratio of the driven to driving shafts is greater than unity, as when the propelling shaft of an automobile revolves faster than the engine shaft.

overhead fire. Fire that is delivered over the heads of friendly troops.

overhit. To hit a target with more destructive force than necessary to accomplish the desired amount of damage.

overmatching plate. Armor plate whose thickness exceeds the diameter of the projectile. Cf: **overmatching projectile.**

overmatching projectile. A projectile whose diameter exceeds the thickness of the armor plate. Cf: **overmatching plate.**

overpressure. The transient pressure, usually expressed in pounds per square inch, exceeding existing atmospheric pressure manifested in the blast wave from an explosion. Cf: **peak overpressure.**

override. To supplant or cancel out the influence of an automatic or robotic control by a manually operated control.

oversea pack. Package or method of packing designed to withstand rough handling of military transportation and distribution overseas.

overspin. In a spin stabilized projectile, when the rate of spin is too great for the particular design of projectile, it becomes overstable and its nose does not turn downward as it passes the summit of the trajectory and follows the descending branch. In such cases the projectile is said to have 'overspin,' or 'overstabilization.'

overstabilization. See: **overspin.**

overtravel. In machine guns, the distance the firing notch overrides the sear notch in cocking, to insure positive engagement of the two notches.

OWC (*abbr.*). 'Ordnance Weapons Command.'

oxidation of oil. The breaking down and combining of oil particles with oxygen of the air to form a dark, sticky substance of a tarry nature. This change in oil structure is the result of severe service under extreme temperatures in the presence of highly agitated air in the interior of the engine. Oxidation is increased by high operating temperatures, low oil consumption, and infrequent oil drains.

oxidizer. In an explosive or other chemical mixture, a substance that furnishes the oxygen for burning

the fuel. For rocket propellants, the oxidizer is often liquid oxygen, nitric acid or the like.

oxygen balance. The excess or deficiency of oxygen as compared to that required to convert the carbon in an explosive to carbon dioxide and the hydrogen to water, expressed as a percentage. It is a measure of the extent to which an explosive is deficient or overly rich in oxygen compared to the amount necessary for its complete decomposition.

oxygen deficiency. *Specif.* The deficiency in the oxygen present in a constituent of a propellant, under the assumption that the oxygen will be utilized in the formation of carbon monoxide and water. Any carbon left uncombined is considered to be a producer of smoke and the number of oxygen atoms required for the formation of the additional carbon monoxide is called an oxygen deficiency. This is expressed as a percentage in the ratio of the atomic weight of the oxygen deficiency to the molecular weight of the compound.

If there is oxygen present in the compound in excess of that required for the formation of carbon monoxide and water, there is said to be an excess of oxygen. The overall oxygen balance of the propellant formulation (deficiency or excess) is the algebraic sum of the oxygen balance of each constituent multiplied by the factor representing the percentage of each in the formulation.

P

PA (*abbr.*). 'Picatinny Arsenal.'

pack. 1. To render impervious, as by filling or surrounding with suitable material, or to fit or adjust, so as to move without giving passage to air, water, or steam; as to *pack* a joint. 2. Provide protection for an article or group of articles against physical damage during shipment. Packing is accomplished by placing articles in a shipping container, and blocking, bracing and cushioning them when necessary, or by strapping the articles or containers on a pallet or skid. See: **amphibious pack** and **oversea pack**. 3. Part of a parachute assembly in which the canopy and shroud lines are folded and carried. In this meaning also called pack assembly.

packaged petroleum. Liquid petroleum in containers of 55-gallon capacity or less; or semisolid or solid petroleum in containers of 400-pound capacity or less.

packaging. (*pkg*) The process of wrapping, cushioning, or putting a thing or things into individual containers, and of completely identifying them separately by a tag or label, esp. with reference to objects shipped together in a large shipping container.

Packaging is concerned with the individual items packed, not with the overall shipping container. Cf: **packing**.

pack artillery. Artillery weapons designed for transport in sections by animals or delivery by parachute. The weapon and carriage are partially disassembled for transport and reassembled for firing from ground positions. When equipped with wheels, pack artillery may be used as towed artillery.

PACK ASSEMBLY, PARACHUTE, UNDERWATER MINE. A complete assembly of all the component parts of a parachute used to retard and stabilize an underwater mine when launched from an aircraft.*

pack howitzer. See: **HOWITZER, PACK.**

packing. 1. The process of putting packages into a large shipping container, together with necessary bracing, weatherproofing, and the like, as well as the marking of the outside container. 2. The process of folding a parachute into its pack. 3. Material wrapped around barrel of water cooled machine guns to prevent leakage of water. 4. A seal which converts axial pressure to radial pressure to preclude passage of fluid past two moving surfaces.

packing ring. A spring ring, or any of a set of such rings, for packing a piston.

pad. 1. A nonadjustable attenuator. See: **attenuator**. 2. A permanent or semipermanent base constructed to support a missile-launcher device.

paint. Pigment dispersed in a vehicle, or a pigment mixed with a dry binder such as cement, casein, or glue. Paint may be a ready mixed liquid or

may be in the form of a paste or powder that requires the addition of other ingredients before use. When mixed and applied in a thin layer, it sets and dries to an opaque solid film.*

PAINT, HEAT RESISTING. A paint that has the quality to withstand temperatures of 400 degrees F. and higher. See also: **ENAMEL, HEAT RESISTING**.*

PAINT, OIL. A paint that uses drying oil or drying oil modified with varnish as the principal nonvolatile component of the vehicle. The total drying oil content, including the oil in the varnish when varnish is used, must be greater than 75 percent, by weight, of the total nonvolatile portion of the vehicle. See also: **ENAMEL**.*

pallet. A platform or shallow open box, commonly four feet square, for holding supplies or material segregated as a unit and making for convenient storage or handling, as in a warehouse. When made in the form of a box, it is called a *box pallet*.

palletize. To store supplies on pallets.

palletized unit load. Quantity of any item, packaged or unpackaged, which is arranged on a pallet in a specified manner and securely strapped or fastened thereto so that the whole is handled as a unit.

PAM (*abbr.*). 1. 'Pulse-amplitude modulation.' 2. 'Pamphlet.'

P&P (*abbr.*). 'Procurement and production.'

panel. An electrical switchboard or instrument board.

PANEL, FIRING, GUIDED MISSILE. A panel upon which are mounted items such as meters, switches, lights, and other necessary instruments which indicate a missile's readiness to fire. Includes facilities for firing a guided missile.*

panoramic sight. See: **telescope, panoramic.**

Pantex Ordnance Plant. Ordnance Corps field installation, located at Amarillo, Texas.

panzer. [German.] A German tank or other armored vehicle. Used in the plural in sense: A German mechanized armored force.

PAPER, LENS. A tissue paper used for wrapping and/or polishing optical lenses or other glass equipment or finely polished surface.*

parabola. A conic section made by a plane intersecting a cone parallel to its side.

parabolic reflector. A paraboloid reflector; a reflector that employs a surface that has a cross section shaped like a parabola.

parabomb. Specially prepared equipment container with a parachute which is capable of opening automatically after a delayed drop.

paracaisson. Small, two-wheeled, hand-drawn vehicle, the body of which forms an aerial delivery container for artillery ammunition and which, upon being assembled, becomes a utility cart.

parachute. (prcht) 1. A contrivance that opens out somewhat like an umbrella and catches the air so as to retard or slow down the movement of a body attached to the contrivance. 2. The canopy of this contrivance.

PARACHUTE, ANCHOR, UNDERWATER MINE. An item designed to retard the descent of an underwater mine anchor during planting operation.*

PARACHUTE AND CONTAINER, BOMB. An assembled unit designed to retard and stabilize a bomb in flight.*

parachute brake. A deceleration parachute.

PARACHUTE, CARGO. A parachute used to drop loads or cargo from an aircraft in flight.*

PARACHUTE, CARGO EXTRACTION. A parachute used in conjunction with aerial delivery of heavy drop equipment such as $2\frac{1}{2}$ ton truck, etc. The purpose of this parachute is to extract heavy equipment from an aircraft in flight and assist the deployment of the load bearing parachute.*

parachute-opening shock. The shock or jolt exerted on a suspended parachute load when the parachute fully catches the air.

parachute troops. Troops organized and trained to be carried into battle by transport aircraft and dropped by parachute, as distinguished esp. from airborne infantry. Also called 'paratroopers' or 'paratroops.'

paracrate. Rigid equipment container for dropping specialized equipment from an airplane by parachute.

paraffin wax. A white translucent, waxy, tasteless, odorless solid, consisting of a mixture of solid hydrocarbons chiefly of the methane series obtained from petroleum.

Before purification it is known as paraffin scale, used as a lubricant, as an ingredient of adhesives, as an absorbent, for electrical insulation, protecting rubber products from suncracking as a general coating agent, in explosives, etc.

parafrag. Short for 'parachute fragmentation bomb.' See: bomb, parachute fragmentation.

parallax. 1. Apparent differences in the position of an object viewed from two different points, especially from a gun position and a directing point. In this meaning, also called azimuth difference. 2. Apparent motion of the cross wire in a telescope across the image of the object as the eye is moved from side to side across the eyepiece. Such parallax is caused by improper focusing of the objective lens. 3. *Antiaircraft.* Distance measured in north-south, east-west, and above-below directions from the battery directing point to the tracking instrument. 4. Angle contained between the two straight lines joining a heavenly body with two different points on earth.

parallax correction. *Specif.* Allowance to be made for difference in position of target as measured from the gun and as measured from the observer's position.

parallax error. 1. Error in an observation caused by making the observation from a position different from the normal one or from the one where the firing data are used. 2. Error made by reading the dial of an instrument from a slant rather than directly from the front.

PARALLEL. One or more precision ground metal tools with two or more opposite sides parallel, made in various shapes and sizes. It is used for laying off, setting up, inspecting and supporting work to be machined.*

parallel arithmetic unit. *Electronic computers.* Unit in which separate equipment is provided to operate (usually simultaneously) on the digits in each column. See also: serial arithmetic unit.

parallel two-terminal pair networks. *Network topology.* Two-terminal pair networks are connected in parallel at the input or at the output terminals when their respective input or output terminals are in parallel.

parameter. A quantity which may have various values, each fixed within the limits of a stated case or discussion.

parapack. 1. A package or bundle with a parachute attached for dropping from an aircraft. 2. Such a package or bundle without its parachute.

parapet. Elevation of earth or material thrown up in front of a trench or emplacement to protect the occupants from fire and observation, and over which fire may be delivered. See: breastwork.

parasheet. A simple form of parachute, in which the canopy is a single piece of material or two or more pieces sewed together to form the equivalent of a single piece. It may have any geometrical form, such as square, hexagonal, or other, and the hem may be gathered to assist in the development of a crown on opening of the parasheet. Sometimes used as an antiricochet device (which see).

parasite drag. See: drag, parasite.

paratroop. Used as adj. in sense: Of or pertaining to a paratrooper or paratroopers, as in paratroop battalion; paratroop carrier.

paratrooper. A person in the parachute troops.

paravane. Protective underwater device which, when towed with a wire rope from a fitting on the bow of a ship, rides out from the ship's side and cuts the cables of anchored mines. The mines will then rise to the surface, where they can be seen and destroyed.

Parkerize. To impart a dull, relatively rough finish, as to a firearm, by use of powdered iron and phosphoric acid.

Parkerization is a patented process of the Parker Rust Proof Company, Detroit, Michigan.

parking apron. An apron (which see) used for parking.

part. 1. Essential element, component, or subassembly of an item of equipment. Parts are held in reserve to replace worn, damaged, lost or destroyed elements of equipment in order to restore the item to sound condition. 2. *Maintenance and supply.* An item which cannot be disassembled or is of such design that disassembly is impractical (bracket, gear, resistor, toggle switch, potted circuit).

part, common. Part which because of its conventional design and standard physical characteristics has a wide range of adaptability in the manufacture and maintenance of equipment.

partial. *Electroacoustics.* 1. A physical component of a complex term. 2. A component of a sound sensation which may be distinguished as a simple tone that cannot be further analyzed by the ear and which contributes to the character of the complex sound.

The frequency of a partial may be either higher or lower than the basic frequency and may or may not be an integral multiple or submultiple of the basic frequency, which see. If the frequency is not a multiple or submultiple, the partial is inharmonic.

When a system is maintained in steady forced vibration at a basic frequency equal to one of the frequencies of the normal modes of vibration of the system, the partials in the resulting complex tone are not necessarily identical in frequency with those of the other normal modes of vibration.

partial carry. See: carry.

partial penetration. Penetration obtained when a projectile fails to pass through the target far enough for either the projectile itself or light from its penetration to be seen from the back of the target; Army partial penetration.

part, peculiar. A part for which (a) the design is controlled by a single manufacturer; and (b) the use is restricted to items produced by a single manufacturer.

part, repair. *Maintenance and supply.* Any part, assembly, or component which is required for installation in the maintenance of an end item.

passive air defense. All measures, other than active defense, taken to minimize the effects of hostile air action. These include the use of cover, concealment, camouflage, and dispersion.

passive armor. A protective device against shaped charge ammunition. Designed to absorb the energy of a shaped charge. Examples: spaced armor (which see), homogeneous materials, plastic armors, composite designs.

passive defense. Measures designed to minimize the effect of an enemy attack. Defense of a place without the employment of active weapons and without the expectation of taking the initiative. Defense is based on protection, deception, dispersion, and concealment.

passive homing. Homing by use of a passive detection device. See: homing.

pass through plate; projectile through plate. Pro-

jectile passes completely through the armor, in ballistic testing.

PASTER, TARGET. An item specifically designed to be used for covering holes shot in a target but which is sometimes used to indicate aiming points on certain types of targets. It generally consists of a square piece of paper, usually gummed on back surface, and is sufficiently large enough to cover shot holes. It comes in various colors, usually black, white or buff to blend with area surrounding shot hole. Applied to target by means of moistened surface or with paste.*

PAT (abbr). 'Platoon antitank.'

patent. A grant made by the Government to an inventor, conveying and securing to him the exclusive right to make, use, and sell his invention for a term of years.

pattern. The distribution of a series of shots fired from one gun or a battery of guns under conditions as nearly identical as possible, the points of impact of the projectiles being dispersed about a point called the center of impact. Also called 'dispersion pattern.'

pattern bombing. A method of bombing in which the bombs are made to strike the target in a certain pattern.

Pattern bombing is done by a formation of planes acting as a single unit. The lead plane of a formation does the sighting for the entire formation, and the formation tries to release its bombs as simultaneously as possible. Pattern bombing, properly done, insures an efficient distribution of bombs.

pattern harmonization. The adjusting of a fighter's fixed guns so that they will produce the largest uniform pattern of lethal density possible at a given range. See: harmonize.

PAULIN. A fabricated, textile item, generally used as a weather protection cover for various items and/or material during storage or transit.*

payload. 1. Generally, that part of a load that is expendable, deliverable, or ready for use in direct accomplishment of the mission. 2. In a guided missile or rocket, the warhead compartment and that which is carried in it. 3. In a projectile, the explosive or other filler.

P-band. A radio-frequency band of 225 to 390 megacycles with wavelengths of 133 to 77 centimeters, respectively. *Obsolescent.* See: frequency, electronic.

pcmk (abbr). 'Piece mark.'

PD (abbr). 1. 'Point detonating.' 2. Chemical agent, 'phenyldichloroarsine.'

PDF (abbr). 'Point detonating fuze.'

pdr (abbr). 1. 'Pounder.' 2. 'Powder.'

PDSQ (abbr). 'Point detonating superquick.'

PE (abbr). 1. 'Plastic explosive.' 2. 'Pentaerythritol' (explosive).

peak overpressure. The highest overpressure resulting from the blast wave. Peak overpressures near the

point harmonization. The adjusting of a fighter's fixed guns so that they converge upon a point at a given range. See: *harmonize*.

pointing. The operation of giving the piece a designated elevation and direction.

point initiating fuze. See: *fuze, point initiating*.

point of air. The aiming point (which see).

point of burst. Point at which a projectile bursts.

point of fall. Point in the curved path of a falling projectile that is level with the muzzle of the gun. Also called *level point*.

point of impact. The point at which a bullet, bomb, projectile, or the like strikes. Cf: *center of impact*; and see: *mean point of impact*.

point target. A precise target of small dimensions. Distinguished from an area target.

Poisson's ratio. Ratio of the unit strain in the perpendicular directions to that in the directions parallel to the simple stress. Varies for different materials, dependent upon the elementary crystal structure of the material. For gun steels it is usually taken as $\frac{1}{2}$.

POL (abbr). 'Petroleum, oil, and lubricants.' 'POL,' pronounced by letter, is applied to fuels, oils, and lubricants for whatever use.

polar coordinate. The location of a point in a plane by the length of a radius vector from a fixed origin in the plane, and the angle the radius vector makes with a fixed line in the plane.

Polaris. Navy surface-to-surface ballistic missile of intermediate range. Intended for launching from surface ships and submarines. Utilizes solid fuel and inertial guidance, switching to celestial.

pole charge. See: *charge, pole*.

polyethylene. A light, tough, flexible, resinous plastic.

polyfurcation. See: *jet breakup*.

pom-pom. 1. A rack of antiaircraft cannon, usually mounted in fours, as on the deck of a ship. 2. An automatic cannon.

'Pom-pom' was first applied to an automatic cannon used by the Boers in the Boer War (1899-1902). This cannon, of the one-pounder automatic type, sounded like the beating of drums.

poppet. A spring-loaded ball engaging a notch. A ball latch.

Porro prism. One of two identical prisms used in the Porro prism erecting system. It is a right angle prism with the corners rounded to minimize breakage and simplify assembly. See: *Porro prism erecting system*.

Porro prism erecting system. A prism erecting system, designed by M. Porro, in which there are four reflections to completely erect the image. Two Porro prisms are employed. The line of sight is bent through 360 degrees, is displaced, but is not deviated.

port. 1. Harbor with its facilities, for example, a port of embarkation of debarkation. 2. Slit or hole in an armored vehicle or fortification through which guns are fired. 3. Small opening in some automatic guns

through which the gas from the bore can escape. The escaping gas actuates a piston whose action prepares the gun for the next shot. 4. Opening in a cylinder block or sleeve for intake, exhaust, water, oil, etc.

position angle. See: *angle of site*.

position correction. Correction applied to firing data to compensate for difference in location of individual pieces in a battery.

position correction grid. Transparent templet superimposed on a large scale plot of a battery position used to determine individual range and deflection corrections within the battery in order to obtain the type of sheaf desired.

position finder. Optical or electrical instrument used in finding the range and position of a target.

position finding. The process of determining the position of a target with relation to the battery and the determination of a future position upon which to direct the fire.

position firing. A term applied to a method of defensive gunnery used by bombers, esp. during WW II, in which definite amounts of deflection are prescribed for firing at attacking fighter planes. See: *deflection, sense 2*.

positioning band. A metal band on some recoilless ammunition, placed to insure the proper positioning of the round inside the chamber and tube.

position of target. In firing at a moving target, as in AA gunnery, three different positions of the target are considered. *Position of target as predicted*—future position of target. The predicted position of the target at the end of the predicted time of flight. *Position of target at instant of firing*—present position of target. The position of the target at the instant the gun is fired. *Position of target at instant of observation*—observed position of the target.

positron. [*positive + electron*.] A positively charged particle having the same mass and ionizing power as an electron.

The positron was first discovered in 1932 in cosmic rays. Positrons are emitted also from radioactive substances, and are sometimes called 'positive electrons.' Cf: *electron*.

post. 1. *Rocketry.* A vertical rod fastening an aircraft rocket to the underside of a wing in a certain kind of launching device. See: *aircraft rocket launcher*. 2. Used generically in reference to any military installation at which military personnel are stationed.

POST, AIMING. A wooden or metal post, having contrasting painted transverse bands, and a metal point or stake for driving into the ground. A cap on top provides a driving surface. It is used as a sighting point in direct fire. May be fitted with a LIGHT, AIMING POST for night operations.*

potential (of an explosive). Total work that can be performed by the gas resulting from the explosion of an explosive when expanded adiabatically from its original volume until its pressure is reduced to

- atmospheric pressure and its temperature to 150°C, or the total quantity of heat given off at constant volume when expressed in equivalent work units.
- potting.** The process of embedding an electronic circuit component or assembly in a (usually) plastic material to reduce susceptibility to deleterious environments, simplify maintenance, etc.
- pour point.** The temperature at which a lubricating oil begins to flow freely.
- pour test.** A test to determine the lowest temperature (*pour point*) at which an oil, as a lubricating oil from petroleum, flows under given conditions.
- powder.** (pdr) An explosive in powder form, that is, in small granules or grains, such as black powder or smokeless propellant of fine granulation. No longer accepted as a general term for propellant or propelling charge. See: **PROPELLANT POWDER.**
- powder bag.** See: **bag, propellant.**
- powder chamber.** See: **chamber.**
- powder fouling.** See: **propellant fouling.**
- powder metallurgy.** Production of finely divided metal powders, and die forming into useful articles by pressure and heat. This process is more economical for appropriate articles (e.g., gears) than machining or casting, and more feasible than ordinary melting and casting for metals having extremely high melting point, such as tungsten.
- powder-moisture test.** Determination of moisture in propellant by drying under prescribed conditions; expressed as percentage by weight.
- powder ring.** See: **ring, powder.**
- powder silk.** Also called 'cartridge silk.' Special silk fabric formerly used in making propellant bags. Powder silk leaves no burning residue when the propellant is burned. Silk has now been largely replaced by other materials and the fabric is called 'cartridge cloth.' See also: **bag, propellant; cloth, cartridge.**
- powder tag.** See: **propellant tag.**
- powder train.** 1. Train, usually of compressed black powder, used to obtain time action in older fuze types. 2. Train of explosives laid out for destruction by burning.
- power.** 1. In a lens, a measure of ability to bend or refract light. It is usually measured in diopters. 2. In a telescope, the number of times the instrument magnifies the object viewed. For example, with a 6-power instrument, an object 600 yards away is enlarged six times, or it appears as it would to the naked eye if it were at a distance of only 100 yards. 3. Mechanical or kinetic energy developed by one or more engines or motors in the transformation of atomic energy, electrical energy, or the chemical energy of fuel; *specif.*, (a) brake horsepower, or (b) thrust (which see). 4. The force or energy that inheres in an electric current, in an atomic pile, or in a chemical fuel. 5. Ability of an explosive to displace the surrounding medium.
- power-driven.** Of a component or piece of equipment: Moved, rotated, or operated by electrical or mechanical energy, as in 'power-driven fan' or 'power-driven turret.'
- power loading.** See: **loading, power.**
- power package.** A complete engine and its accessories, designed as a single unit for quick installation or removal.
- power plant.** 1. *Specif.* The complete engine or engines for a vehicle, together with accessories, fuel and oil tanks and lines, etc. 2. *Restrictive.* An engine only, without accessories, tanks, etc.
- power rammed.** Indicates, in cartridge nomenclature, that the cartridge is intended to be rammed into the gun by a power rammer.
- POWER TAKEOFF, TRANSMISSION.** An item consisting of one or more gears and gear shifting devices housed in a casing, designed to be mounted on a transmission or transfer transmission to provide additional power shafts for driving auxiliary equipment such as pumps, compressors, winches, cranes, and the like. Excludes items with input shaft.*
- power train.** System including those parts utilized in transmitting power from the output shaft of the engine to the wheels or the track.
- power train efficiency.** Efficiency of the power train =
$$\frac{\text{Power input to wheel or track}}{\text{Power delivered to engine output shaft}}$$
- power-transmission system.** A group of units transmitting power from the engine (power plant) to the wheels or tracks. It consists of clutch, transmission, propeller shafts, universal joints, differentials, and driving axle shafts.
- power traverse.** Turning of a gun to change the direction of fire by means of a power-driven mechanism, as in a tank, aircraft, or ship turret.
- power traverse mechanism.** Mechanism that is driven by power and used in turning a gun to change the direction of fire, especially in a tank, aircraft, or ship turret.
- power turret.** A power-driven turret. See: **power-driven.**
- power unit.** An item consisting of an internal combustion engine with all external accessories, cooling system, fuel system (may have tank or designed for direct remote fuel source), and operational controls, mounted on a base or having a base which is an integral part of the engine. It is used as a prime mover for various types of equipment and machinery. Excludes motor generator and generator sets. For item name use type of engine as modifier, such as gasoline, diesel, gas, gas turbine, liquid propellant and solid propellant. Includes power units with compressed air bleedoff. Excludes **ENGINE, GASOLINE; ENGINE, DIESEL** and **ENGINE, GAS TURBINE.***
- POWER UNIT, DIESEL.** An **ENGINE, DIESEL** with accessories to form a **power unit** (which see).
- POWER UNIT, GASOLINE.** An **ENGINE, GASOLINE** with accessories to form a **power unit** (which see).

POWER UNIT, MULTIPLE ENGINE. Two or more complete reciprocating gasoline or diesel engines mounted on a common base and usually interconnected to a common gear case.*

PPI (abbr). 'Plan position indicator.'

PPM (abbr). 'Pulse-position modulation.'

prac (abbr). 'Practice.'

practice ammunition. Ammunition used for target practice or similar types of training. For gun and rocket type weapons, practice ammunition contains a propelling charge, and either an inert filler or a spotting charge in the projectile. Other types of practice ammunition, such as bombs or mines, usually contain a spotting charge or some form of charge to indicate functioning.

practice bomb. See: **BOMB, PRACTICE.**

practice fire. Target practice with live ammunition.

practice grenade. See: **grenade, practice.**

PRACTICE UNIT. An item comprising the necessary equipment for practice runs simulating special bombing missions.

Prandtl number. An expression of the temperature distribution in a fluid, equal to the product of the specific heat at constant pressure and the kinematic viscosity divided by the thermal conductivity.

prcht (abbr). 'Parachute.'

precession. *Mechanics.* A change in the direction of the axis of a rotating body, as a spinning top, or gyroscope, the effect of which is to rotate this axis (**axis of precession**) perpendicular to its original direction and to the axis of the twisting forces producing the change. A spinning projectile, as a gyroscopic body, is also subject to this phenomenon as a result of the various aerodynamic forces which it encounters along its trajectory.

precipitation number. A number indicating the amount of water and solids carried in suspension in a sample of lubricating oil, expressed as a percentage.

The precipitation number is determined by precipitating the water and solids in the sample by centrifugal force.

precision. The quality of having small dispersion about the mean.

precision adjustment. A deliberate adjustment of the fire of one weapon for the purpose of placing the center of impact accurately on the target.

precision bombing. 1. In a restricted sense, horizontal bombing done with the appropriate precision instruments and equipment so as to strike a target of comparatively small bulk or area. 2. In a general sense, any type of bombing against a small or restricted target. *Rare.*

In sense 1, precision bombing is usually a strategic operation, and is done either to achieve destruction of a target with a minimum expenditure of force, or to hit a target near other areas or installations not considered desirable to hit. When the term is used in sense 2, it is usually applied to tactical at-

tacks by dive bombers or fighter-bombers against tanks, etc. Cf: **area bombing.**

precision fire. Fire in which the center of impact is accurately placed on a limited target; fire based on precision adjustment. Usually precision fire is used to destroy enemy installations, such as gun emplacements, structures, and supply points. Precision fire differs from area fire, which is directed against a general area rather than against a given objective in the area.

precision sweep. In radar, a small portion of a normal sweep, usually 2,000 yards selected and expanded over the entire radar screen in order to permit precise range measurements.

precombustion chamber, diesel engine. A chamber in the cylinder head into which the oil is sprayed in some engines, and partly burned when mixing with the small amount of air in the precombustion chamber. It is so proportioned with respect to the clearance volume proper of the cylinder that only about 30 percent of the combustion takes place within the chamber itself.

predicted barrage. *Specif.* A more precise term for an **antiaircraft barrage** (sense 1).

predicted firing. Firing at the point at which a moving target is expected to be when the projectile reaches it, according to predictions based on observation.

predicting dead time. The time allowed for calculation and applying firing data, from the time of observation to the instant of firing.

predicting interval. The interval between successive predictions of future positions of the target.

prediction. Determining what the probable future position of a moving target will be at a given time.

preengraved rotating band. See: **band, rotating, preengraved.**

preignition. The spontaneous and premature ignition of the mixture in the combustion chamber of a reciprocating engine, caused by an overheated part or spot in the chamber.

premature. A type of malfunctioning in which a munition functions before the expected time of circumstance.

preparation fire. Fire delivered on a target or predetermined point preparatory to an assault on the target. It may be naval, ground, or air.

preparatory fire. In AA fire, to determine or check corrections of firing data prior to conducting fire for effect.

prepositioned. Actual placement of a weapon at the desired point of detonation and preparation for firing by some form of remote control or a timer mechanism.

prescribed muzzle velocity. See: **standard muzzle velocity.**

present angular height. A term denoting the element of data pertaining to the **present position** of the target; that is, the position at the instant the gun is fired.

present elevation. *Antiaircraft.* Elevation (which see, sense 2) corresponding to the present position of the target.

present position. Position of a moving target at the instant of firing.

present range. The range between a gun and the present position of its target.

preservation. 1. The result of packing and/or the application of preservatives. 2. That work performed on materiel to prevent deterioration and to correct minor defects not requiring major repairs, rebuild, renovation or major modification.

PRESERVATIVE OIL, HYDRAULIC SYSTEMS. A fluid of vegetable origin with admixtures of additive agents, used as a preservative for hydraulic brake parts and components in warehouse storage and for vehicles in stand-by storage. It may also function temporarily as a hydraulic brake fluid for short periods, such as in moving vehicles from storage to shop.*

preservatives. Material used to protect an item against corrosion, deterioration, disintegration, and physical damage.

preset guidance. A type of guidance for guided aircraft rockets or other guided missiles in which the path of the missile is determined by controls set before launching. Cf: *inertial guidance.*

The mechanism for this type of guidance usually consists of gyros, integrating accelerometers, and related devices.

pressed loading. A loading operation in which bulk material, such as an explosive in granular form, is reduced in volume by the application of pressure. Cf: *melt loading.*

pressure, base. The aerodynamic pressure exerted on the base or rear end of a missile in flight.

pressure, center of. *Ballistics.* The point where the resultant force caused by air resistance intersects the axis of the projectile.

pressure, dynamic. The pressure exerted by a gas, liquid, or solid solely by virtue of its relative motion when it strikes an object.

For example in a pitot-static tube, dynamic pressure is that part of the impact pressure derived from the relative motion of the air, as distinguished from that derived from atmospheric pressure.

pressure gage. See: **GAGE** (as modified); **INDICATOR, PRESSURE**; **manometer.**

pressure, impact. The pressure existing when a moving stream of gas strikes a surface which brings part of the gas abruptly to rest. This recovered pressure is roughly equivalent to the stagnation pressure, for subsonic flow.

pressure, injection. See: *injection pressure.*

pressure microphone. *Electroacoustics.* A microphone in which the electric output substantially corresponds to the instantaneous sound pressure of the impressed waves.

A pressure microphone is a gradient microphone (see: *gradient microphone*) of zero order and is non-

directional when its dimensions are small compared to a wavelength.

pressure ratio, critical. See: *critical pressure ratio.*

pressure, recovered. The pressure actually obtained when the static pressure is increased by the conversion of a portion of the kinetic energy in the stream of gas to pressure energy. The maximum recovered pressure would be stagnation were it not for losses in the conversion process.

pressures, gun. Pressures within a gun tube or barrel, as used in design practices.

Because of the wide variations in size, wall ratios, heat dissipation, required factors of safety, etc., design practices vary for the different types of weapons. Some pressure terms having significance in the design of (a) all tubes and barrels, (b) cannon tubes, (c) recoilless rifle tubes, and (d) small arms barrels, are given below.

(a) *For all Tubes and Barrels*

chamber pressure. The pressure existent within the gun chamber at any time as a result of the burning of the propellant charge. This pressure normally varies from atmospheric pressure at the time of ignition to a peak pressure which is attained when the projectile has traveled a very short distance, decreasing steadily until the projectile emerges from the muzzle. It then drops quickly to atmospheric pressure again.

(b) *For Cannon Tubes*

elastic strength pressure. (ESP) Computed true internal gas pressure in a gun at any given cross section thereof that will stress the metal at the inner layer of the wall at that section tangentially up to the minimum elastic limit of the metal from which the inner layer is made. Normally required to be at least 1.5 times the computed maximum pressure.

maximum pressure. Maximum value of the pressure exerted by the propellant gases on the walls of a gun during the firing of a round.

computed maximum pressure. (CMP) Value of maximum pressure computed by means of interior ballistic formulas and which it is desired will be developed when a new gun of the particular type is fired under standard conditions, with a propelling charge which will give to the projectile its rated muzzle velocity.

rated maximum pressure. (RMP) Value of maximum pressure specified in the propellant specifications as the upper limit of average pressure which may be developed by an acceptable propellant in the form of propelling charges which will impart the specified muzzle velocity to the specified projectile. Normally about 2000 psi above the computed maximum pressure, subject to determination at the time of development.

lower acceptable mean maximum pressure. (LAMMP) Value of maximum pressure specified in the propellant specifications as the lower limit for the average of the maximum pressures developed by acceptable propellant in propelling charges that will impart the specified muzzle

- velocity to the specified projectile. Normally about 4000 psi under the computed maximum pressure, subject to determination at the time of development.
- permissible mean maximum pressure.** (PMMP) Value which should not be exceeded by the average of the maximum pressures developed in a series of rounds fired under any service conditions. Normally established as 1.08 times the rated maximum pressure.
- permissible individual maximum pressure.** (PIMP) Value which should not be exceeded by the maximum pressure developed by any individual round under any service condition. Normally established as 1.15 times the rated maximum pressure.
- (c) *For Recoilless Rifle Tubes*
- elastic strength pressure.** (ESP) The gas pressure that will produce an equivalent stress (based on distortion-energy criteria) at some point in the gun that is equal to the minimum elastic limit of the material at ambient temperature.
- elastic strength pressure (hot).** (ESP (hot)) A reduced elastic strength pressure; the reduction is made to allow for the decreased elastic limit of the gun materials at elevated temperatures.
- computed maximum pressure.** (CMP) The gas pressure which is computed by means of interior ballistic formulas to be the maximum gas pressure developed by the gun under standard conditions and rated muzzle velocity.
- rated maximum pressure.** (RMP) The gas pressure which should not be exceeded by the average of the maximum pressures developed by a group of firings which will impart the specified muzzle velocity to the specified projectile. If the RMP is exceeded, the propellant lot is considered unacceptable.
- lowest acceptable mean maximum pressure.** (LAMMP) The gas pressure which should be equalled or exceeded by the average of the maximum pressures developed in a series of rounds which meet the muzzle velocity requirements.
- permissible mean maximum pressure.** (PMMP) The gas pressure which should not be exceeded by the average of the maximum pressures developed in a series of rounds fired under any service conditions.
- permissible individual maximum pressure.** (PIMP) The gas pressure which should not be exceeded by the maximum pressure developed by any individual round under any service condition.
- (d) *For Small Arms Barrels*
- maximum (or peak) chamber pressure.** Maximum value of pressure induced in the chamber as determined with the help of a copper crusher gage or with a piezoelectric gage. Comparison has shown that copper pressures should be multiplied by 1.2 to give true peak pressures.
- residual chamber pressure.** Pressure in chamber from time of bullet exit.
- barrel pressure.** Value of pressure induced by the propellant gases at any barrel position and at the time that the bullet bypasses the particular position. May be calculated with the help of the simultaneous chamber pressure.
- maximum barrel pressure.** Value of pressure induced by the propellant gases at a barrel position just passed by the bullet, and at a time that peak pressure exists in the chamber.
- proof pressure.** This pressure is about 20 percent larger than that induced by the service round. If used for barrel design purposes, it provides some margin of safety.
- pressure, stagnation.** Static pressure that could be realized if the flow could isentropically be brought to rest. It depends upon the static pressure, the mach number, and kind of gas. At low mach numbers, it approaches the sum of the static pressure and the incompressible velocity head but is increasingly greater than this sum at higher mach numbers.
- pressure, static.** The pressure which is exerted by a gas at rest, or which would be indicated by a gage placed in the stream and moving with the same speed as the stream. The static pressure for a given gas is determined by the density and the temperature.
- pressure-travel curve.** Curve showing pressure plotted against the travel of the projectile within the bore of the weapon.
- PRESS, WIRE ROPE, POWDER ACTUATED.** A tool which utilizes an explosive charge to compress a fitting or splicing sleeve to wire rope. In operation the tool is not fixed but is controlled by hand. The item is suitable for use under water as well as above water.*
- preventive maintenance.** The systematic care, servicing, and inspection of equipment and facilities for the purpose of maintaining them in serviceable condition and detecting and correcting incipient failures.
- Primacord.** Trade name for a type of CORD, DETONATING, utilizing PETN as the explosive filler.
- Primacord net.** See: detonating net.
- primary armament.** See: primary weapon.
- primary blast injuries.** Those injuries incurred as a direct result of the pressures of the blast or shock wave.
- primary bomb damage.** Physical bomb damage. See: bomb damage (sense 1).
- primary coil.** The input coil or winding of a transformer.
- primary gun.** Principal or main gun, especially of a tank or other armored vehicle.
- primary high explosive.** An explosive which is extremely sensitive to heat and shock and is normally used to initiate a secondary high explosive. A primary explosive is capable of building up from a

deflagration to detonation in an extremely short distance and time; it can also propagate a detonation wave in an extremely small diameter column. The term is generally used in referring to a pure compound and not to an explosive mixture. It has been suggested (Bowden and Yoffe) that primary explosives can be defined on the basis that upon slow heating they will decompose explosively while still in the solid state, while secondary high explosives will melt before undergoing an explosive reaction. This characteristic is true for mercury fulminate, lead azide, lead styphnate and tetracene; however, data are not available for all primary explosives. (Note: Some authorities recognize the term as 'primary explosive' but not as 'primary high explosive,' maintaining that 'high explosive' is an entirely separate entity.) Cf: **secondary high explosive.**

primary sample. *Armor plate.* A flat plate produced in order to sample resistance to penetration and resistance to shock tests, for each lot. Primary sample is 36" × 36". One is required for each group of plates of the same thickness from the same mill heat.

primary structure. The main framework, including fittings and attachments. Any structural member the failure of which would seriously impair the safety of the missile is a part of the primary structure.

primary weapon. The principal arm of a combat unit. The rifle is the primary or basic weapon for an infantry rifle company, as compared with grenades or chemical projectiles, which are secondary or auxiliary weapons in such an organization.

prime. To introduce fuel into the induction system of an engine preparatory to starting the engine.

prime contract. A contract, agreement, or, in some cases, a purchase order entered into by a contractor with the United States Government.

prime contractor. A contractor whose contract is directly with the Government. Distinguished from a subcontractor. Often called the 'contractor' for short.

prime mover. In a contrivance of two or more moving parts, that unit considered to be the source, or principal source, of energy for movement, as with a tractor pulling a trailer truck.

primer. A relatively small and sensitive initial explosive train component which on being actuated initiates functioning of the explosive train and will not reliably initiate high explosive charges. In general, primers are classified in accordance with the method of initiation; such as, percussion, stab, electric, friction, etc. Primer is also used as a term referring to the assembly which ignites propelling charges. Primers exist in various forms and types, some of which are listed and defined in suitable entries below.

primer, artillery. Term applied to a primer (which see) provided to effect ignition of the propellant charge of an artillery weapon. In ammunition employing a cartridge case, the primer is contained in

the cartridge case. For separate loading ammunition the primer is inserted in the breechblock. Consists of a charge of heat producing material, such as black powder, together with means for igniting the charge, and a metal housing to permit it to be handled as a unit. Artillery primers are classified by the method of initiation, as percussion, electric, friction, and combination percussion-electric.

primer, blown. A primer that, when the cartridge is fired, is entirely blown from the head of a small arms cartridge case. This is one of the most serious defects found in a cartridge.

primer, cannon. Term applied to primer (which see) used with separate loading ammunition.

primer, case. Term applied to primer (which see) intended to be assembled into the cartridge case of case ammunition.

primer cup. A small metal cup, into which the primer mixture is loaded. See: **primer; primer mixture.**

primer-detonator. A unit, in a metal housing, in which are assembled a primer, a detonator, and when indicated, an intervening delay charge.

PRIMER-DETONATOR, FUZE, BOMB. A metallic device designed to contain a combination of explosive charges for assembly into a fuze to initiate the detonation wave in the explosive train of a bomb. It may be empty for use in training.* See: **primer-detonator.**

PRIMER, ELECTRIC. A primer (which see) designed for initiation by an electric current.

PRIMER, ELECTRIC AND PERCUSSION. A primer (which see) designed for initiation either by impact of a firing pin, or by electric current, as desired.

primer, friction. Type of primer (which see) that is fixed by pulling a toothed wire or plug through an explosive mixture. Largely supplanted by **PRIMER, ELECTRIC** and **PRIMER, PERCUSSION.**

PRIMER-IGNITER, MINE FUZE. An item consisting of a priming device and an igniting device designed to initiate explosive action of an antipersonnel mine.*

primer, igniting. An auxiliary primer that carries the fire from a primer to the propelling charge in certain subcaliber tubes.

primer leak. Defect in a cartridge which allows partial escape of the hot propelling gases in a primer, caused by faulty construction or an excessive charge.

primer, lock. Term applied to primer (which see) intended to be placed by hand in the firing lock of a gun. It is used for initiation of the ignition of bag charges.

primer, long. Term applied to primer (which see) with relatively long body, designed to provide central ignition for a propelling charge. Such a primer is used in a central tube ignition system. See also: **ignition system, central tube.**

primer mixture. An explosive mixture containing a sensitive explosive and other ingredients, used in a primer.

- primer mixture, conductive.** Primer mixture (which see) containing a small amount of conductive material, such as carbon, used in a bridgeless type PRIMER, ELECTRIC. The heat necessary for firing the primer is generated by the resistance offered to the flow of the firing current through the mixture.
- PRIMER, PERCUSSION.** Any primer (which see) designed to be initiated by percussion.
- PRIMER, PERCUSSION, INERT.** A PRIMER, PERCUSSION in which the explosive components are simulated by inert components.
- primer seat.** Chamber in the breech mechanism of a gun that uses separate-loading ammunition, into which the primer is set.
- primer setback.** The backward movement of a primer cup in a cartridge case which occurs when the base of the cup is not properly supported by the bolt face or breechblock.
- priming composition.** A physical mixture of materials that is very sensitive to impact or percussion and, when so exploded, undergoes very rapid autocombustion. The products of such an explosion are hot gases and incandescent solid particles. Priming compositions are used for the ignition of primary high explosives, black powder igniter charges, propellants in small arms ammunition, etc.
- priming pump.** A device on motor vehicles and tanks, providing a means of injecting a spray of fuel into the engine to facilitate starting.
- principal item.** Item which, because of its major importance, requires detailed analysis and examination of all factors affecting its supply and demand, as well as an unusual degree of supervision. Its selection is based upon such criteria as strategic importance, high monetary value, unusual complexity of issue, and procurement difficulties. See: **secondary item.**
- principal lateral deflection angle.** See: **lateral deflection angle.**
- principal vertical deflection angle.** See: **vertical deflection angle.**
- printed circuit.** An electronic circuit which is reproduced, in whole or in part, by procedures which are classified as printing techniques. These techniques differ in detail, but all have as their objective the rapid, automatic and inexpensive reproduction of electronic circuits in a usable form.
- prior-art search.** 1. A search for prior-art which may possibly anticipate an invention which is being considered for patentability. 2. A similar search but for the purpose of determining what the status of existing technology is before going ahead with new research—done to avoid unwittingly retracing steps taken by other workers in the field.
- prism.** A transparent body with at least two polished plane faces inclined toward each other, from which light is reflected or through which light is refracted. When light is refracted by a prism, it is deviated or bent toward the thicker part of the prism.
- prismatic compass.** Magnetic compass combined with a sighting device, used to measure angles. It is equipped with a prism to assist in reading the scale while sighting. It may be equipped with a clinometer for measuring vertical angles.
- prismatic lens.** A lens with parallel grooves or flutes which deflect and distribute light rays.
- probability factor.** A factor used as an argument in entering the probability tables. It is equal to the error not to be exceeded, divided by the probable error.
- probable.** An instance in which a hostile aircraft is probably destroyed; the hostile aircraft so designated.
- probable error.** 1. *General.* A value that any given error will as likely fall under as exceed. 2. *Gunnery.* Measure of the impact distribution in the dispersion pattern around the center of impact; dimensionally expressed in firing tables as one interval of the dispersion ladder. See: **range probable error.**
- proc (abbr).** 'Procurement.'
- process control.** A process inspection technique based on statistical methods which makes possible the diagnosis and correction of production troubles at the earliest point in the process before defective material has been produced.
- processing.** 1. Series of related steps taken in the segregation, identification, classification and preparation of records of materiel or equipment. 2. Treatment of materiel or equipment to prevent its deterioration, including cleaning, drying, applying paint or preservative compounds, sealing and packaging.
- process inspection.** Inspection during process of manufacture rather than after assembly.
- procurement.** (proc) 1. In a broad sense, the complete action or process of acquiring or obtaining personnel, materiel, services, or property from outside a military service by means authorized in pertinent directives. 2. More specifically, the action or process of acquiring or obtaining materiel, property, or services at the operational level, i.e., purchasing contracting, and negotiating directly with the source of supply.
- procurement lead time.** (prolt) The time elapsing between the initiation of procurement action and the receipt into the supply system of the materiel procured.
- product engineering.** Translation of the development design into one suitable for efficient manufacture in the desired quantities and for the conditions of specified usage, handling, and life; the development and preparation of functional ordnance designs and/or specifications which are not only sufficiently clear and complete to represent the requirements and intent of research, but are also prepared in such manner as to facilitate efficient manufacture with the minimum of modification.
- Product engineering includes such liaison with and direction over production engineering as to insure that the end product is suitable for service use.

production. 1. The act or process of producing, esp. of gathering and fabricating raw materials into finished articles. 2. In a restricted sense, the act or process of manufacturing finished articles. 3. That which is produced.

In sense 1, administrative actions or processes, such as scheduling, inspection, and inventory control, concomitant with the actual producing, are considered a part of production.

production engineering. 1. Consultation with product engineering on prototype or functional developments and designs and specifications and the making of recommendations that will promote maximum efficiency and economy in manufacture. 2. Participation in an advisory or consulting capacity in the preparation of detailed manufacturing drawings and specifications from which the item can be most efficiently manufactured, having in mind not only the limited production required in time of peace but also the high rate of production with unskilled workers which is required in time of war. 3. The performance of the engineering function incident to efficient manufacture, such as tool and gage engineering, method engineering, process engineering, production research, job standards.

production model. A finished item produced under particular production techniques. Cf: **prototype**, sense 1.

This term applied esp. to the first object to be turned out by a particular method of production, which serves as an example of the objects that will follow it. It differs from a prototype in that the latter is not necessarily, and usually is not, made by the same methods as those used in producing the objects that follow it.

production prototype. Article or piece of equipment of a specific model which is used to aid in setting up facilities and methods for production of that particular model.

production requirements. The sum of authorized stock levels and pipeline needs less stocks expected to become available, stocks on hand, stocks due in, returned stocks, and stocks from salvage, reclamation, rebuild, and other sources.

profile drag. That part of the airfoil drag that results from the skin friction and the shape of the airfoil as indicated by the airfoil profile.

profile thickness. The maximum distance between the upper and lower contours of an airfoil, measured perpendicular to the mean line of the profile.

program. *Electronic computers.* A plan for the solution of a problem. A complete program includes plans for the transcription of data, coding for the computer and plans for the absorption of the results into the system. The list of coded instructions is called a *routine*; to plan a computation or process from the asking of a question to the delivery of the results, including the integration of the operation into an existing system. Thus programming consists of planning and coding, including numerical analysis, systems analysis, specification of printing

formats, and any other functions necessary to the integration of a computer system.

progressive burning. See: **progressive granulation.**

progressive granulation. Propellant granulation in which the surface area of a grain increases during burning. The burning of a propellant with progressive granulation is termed 'progressive burning.' Cf: **degressive granulation**; **neutral granulation.**

proj (*abbr.*). 1. 'Projectile.' 2. 'Project.'

project. (*proj*) A specifically defined task within a research and development field, which is established to meet a single military requirement, either stated or anticipated, for research data, an end item of materiel, a major component, or a technique.

projectile. (*proj*) 1. *General.* A body projected by exterior force and continuing in motion by its own inertia. 2. *Specif.* A missile (sense 1) for use in any type of gun (sense 1). In the general sense the term is sometimes applied to rockets and guided missiles, although they may not fall within the stated definition. In sense 2, the term 'projectile' is preferred over 'shell,' 'shot,' and the like, in official nomenclature.

PROJECTILE AND PROPELLING CHARGE, 120 MILLIMETER. An item, consisting of a projectile and a propelling charge in a cartridge case, boxed and issued as a unit, to provide all material required to fire a 120-millimeter weapon once.

projectile, arrow. A relatively long projectile which is designed to be fired from a gun of a caliber considerably larger than the diameter of the projectile body. It is stabilized by fins having a span approximately that of a caliber of the gun. This design is made for the purpose of increasing the velocity, to decrease the time of flight, and/or increase the striking energy of the projectile.

projectile, colored marker. Projectile loaded with a charge consisting primarily of organic dye, and provided with a burster charge. Upon impact the projectile is ruptured and the dye is dispersed and vaporized by the heat of explosion. The dye then resolidifies in the air, forming a colored smoke cloud, which serves as a marker and/or target indicator to supporting ground and air forces.

projectile, common. A penetrating type projectile containing a bursting charge of high explosive, intended to explode after passing through the lighter protective armor of a vessel.

projectile, composite rigid. An armor-piercing projectile consisting of a core of heavy, hard material, such as tungsten carbide, contained within a non-separable carrier of lightweight material, such as aluminum. The carrier is termed a 'sabot.' See also: **hypervelocity armor-piercing**; **sabot.**

projectile, concrete piercing. Projectile especially designed or adapted for penetrating concrete and other similarly resistant targets.

projectile, drill. An inert projectile of the same weight, center of gravity, and essential contour as the service separate loading projectile, designed or adapted for drill purposes.

- projectile, drive fastener, powder actuated.** See: **PIN, DRIVE, POWDER ACTUATED.**
- projectile, dummy.** Projectile that has no explosive charge. Dummy projectiles are used for practice and training purposes.
- projectile, fragment simulator.** Projectile which simulates the action of a fragment. Used in ballistic tests at the proving ground.
- projectile, high capacity.** A projectile with thin walls and high explosive loading, for use where no special penetrative qualities are required.
- projectile, high explosive.** Projectile with a bursting charge of high explosive.
- projectile, high explosive plastic.** (HEP projectile) A thin-walled projectile, filled with plastic explosive. The projectile is designed to 'squash' against an armored target before detonation, and to defeat the armor by producing spalls which are detached with considerable velocity from the back of the target plate. Also called 'squash head,' especially by the British. See: **high explosive plastic.**
- projectile, illuminating.** Projectile, with a time fuze, that releases a parachute flare at any desired height. Used for lighting up an area. Popularly called 'star shell.' See: **flare, parachute.**
- PROJECTILE, 5 INCH 38 CALIBER.** A projectile intended for firing from 5-inch 38-caliber weapons.
- PROJECTILE, 5 INCH 38 CALIBER DUMMY.** A projectile, dummy (which see) for 5-inch 38-caliber weapons.
- PROJECTILE, 5 INCH 51 CALIBER.** A projectile intended for firing from 5-inch 51-caliber weapons.
- PROJECTILE, 5 INCH 51 CALIBER DUMMY.** A projectile, dummy (which see) for 5-inch 51-caliber weapons.
- PROJECTILE, 5 INCH 54 CALIBER.** A projectile intended for firing from 5-inch 54-caliber weapons.
- PROJECTILE, 5 INCH 54 CALIBER DUMMY.** A projectile, dummy (which see) for 5-inch 54-caliber weapons.
- PROJECTILE, 6 INCH.** A projectile intended for firing from 6-inch weapons.
- PROJECTILE, 6 INCH DUMMY.** A projectile, dummy (which see) for 6-inch weapons.
- PROJECTILE, 8 INCH.** A projectile intended for firing from 8-inch weapons.
- PROJECTILE, 8 INCH DUMMY.** A projectile, dummy (which see) for 8-inch weapons.
- PROJECTILE, 12 INCH.** A projectile intended for firing from 12-inch weapons.
- PROJECTILE, 14 INCH.** A projectile intended for firing from 14-inch weapons.
- PROJECTILE, 14 INCH DUMMY.** A projectile, dummy (which see) for 14-inch weapons.
- PROJECTILE, 16 INCH.** A projectile intended for firing from 16-inch weapons.
- PROJECTILE, 16 INCH DUMMY.** A projectile, dummy (which see) for 16-inch weapons.
- projectile, leaflet.** A projectile designed for, or adapted to, use as a carrier for leaflets.
- PROJECTILE, LINE THROWING GUN.** A special projectile for use in the Lyle Lifesaving Gun, caliber .45/70, a smooth bore shoulder rifle used for line throwing. The projectile is a steel, club-shaped rod and the rear end fits into a special blank cartridge. The forward end of the projectile has an eye machined into it, for attachment of one end of the line. See also: **CARTRIDGE, CALIBER .45 LINE THROWING.**
- PROJECTILE, 60 MILLIMETER.** A projectile intended for firing from 60-millimeter weapons.
- PROJECTILE, 81 MILLIMETER.** A projectile intended for firing from 81-millimeter weapons.
- PROJECTILE, 120 MILLIMETER.** A projectile intended for firing from 120-millimeter weapons.
- PROJECTILE, 120 MILLIMETER DUMMY.** A projectile, dummy (which see) for 120-millimeter weapons.
- PROJECTILE, 155 MILLIMETER.** A projectile intended for firing from 155-millimeter weapons.
- PROJECTILE, 155 MILLIMETER DUMMY.** A projectile, dummy (which see) for 155-millimeter weapons.
- PROJECTILE, 240 MILLIMETER.** A projectile intended for firing from 240-millimeter weapons.
- PROJECTILE, 240 MILLIMETER DUMMY.** A projectile, dummy (which see) for 240-millimeter weapons.
- PROJECTILE, 280 MILLIMETER.** A projectile intended for firing from 280-millimeter weapons.
- PROJECTILE, 280 MILLIMETER DUMMY.** A projectile, dummy (which see) for 280-millimeter weapons.
- projectile, monobloc.** Armor-piercing projectile which consists of one piece of steel, suitably heat treated. May be provided with a false ogive to decrease air resistance.
- projectile, multipurpose.** A projectile designed so that the type of payload can be changed. This is accomplished by using prepared loads in canister form and providing a removable base plug to permit change of canister. Thus a canister containing colored smoke mixture can be replaced by, for instance, one containing leaflets.
- projectile, nonfragmenting.** Projectiles for anti-aircraft gun practice, containing a smoke producing substance, available in various colors, which makes it possible to observe the burst without close bursts destroying the target.
- projectile, overmatching.** See: **overmatching projectile.**
- projectile, proof.** Special projectile for use at proving grounds, usually consisting of a solid, blunt nosed projectile of low cost. It duplicates the standard projectile in weight and location and type of rotating band so that it may be used in developing propelling charges as well as for proof firing of guns.
- projectile rammer.** See: **rammer.**

projectile, smoke. Any projectile containing a smoke producing chemical agent with means for properly dispersing the agent.

projectile, squeeze bore. See: **projectile, tapered bore.**

projectile, tapered bore. A projectile intended for firing in a gun tube having a tapered bore (squeeze bore), as a means of obtaining increased velocity. See: **tapered bore.**

projectile, target practice. Projectile suitable for target practice use. Usually has same size, shape, and weight as a projectile actually used in service. Some models are inert; others contain a smoke puff charge. Sometimes called merely 'target projectile.'

projectile, training. Projectile used in instruction and drill, often one that contains no explosive. Some training projectiles may be used more than once.

projector. 1. *General.* Any apparatus for launching a projectile, such as a gun or rocket launcher. 2. Smooth bore type barrel or other unrifled weapon from which pyrotechnic signals, grenades, and certain mortar projectiles are fired. 3. A rack for launching target rockets. 4. Special type of gun for projecting antisubmarine projectiles.

PROJECTOR CHARGE, HIGH EXPLOSIVE, 7.2 INCH. A missile which is propelled by an explosive cartridge from a projector. The missile consists of a head, a tail assembly, a means of stabilization, and a fuze. Excludes rockets and missiles whose trajectory can be altered in flight.*

PROJECTOR CHARGE, INERT, 7.2 INCH. A missile similar to a PROJECTOR CHARGE, HIGH EXPLOSIVE, 7.2 INCH except that it is without explosive components in fuze, head, or tail assembly. Excludes rockets and missiles whose trajectory can be altered in flight.*

PROJECTOR CHARGE, PRACTICE, 7.2 INCH. A missile similar to a PROJECTOR CHARGE, HIGH EXPLOSIVE, 7.2 INCH except that it is without a fuze and the head is filled with a practice charge or with an inert material. The tail assembly contains an explosive cartridge. Excludes rockets and missiles whose trajectory can be altered in flight.*

PROJECTOR, PYROTECHNIC, HAND. A manually-operated, muzzle-loading, barrel-type projector used for projecting flares or signals. It is fired by striking the hand knob against the hand, ground or other object. Excludes PROJECTOR SIGNAL, GROUND.*

PROJECTOR, SIGNAL, GROUND. A manually-operated, muzzle-loading projector used for projecting high-burst ranging signals from the ground. Excludes PROJECTOR, PYROTECHNIC, HAND and PISTOL, PYROTECHNIC.*

prolonge. Rope, with a hook or loop at one end, with which soldiers can move a vehicle or gun carriage into position.

prolt (abbr). 'Procurement lead time.'

Prony brake. A form of friction brake or dynamometer in which the pull on the flywheel friction

blocks is measured by a spring balance or weighted lever. See also: **brake horsepower.**

proof. The ballistic test (which see). For propellants, proof also includes chemical and stability tests.

proof firing. The process of firing certain rounds for the purpose of testing the serviceability of either a gun or a carriage.

proof mark. Distinguishing mark on weapon to indicate inspection and proof firing.

proof pressure. See: **pressures, gun.**

proof projectile. See: **projectile, proof.**

propaganda shell. See: **projectile, leaflet.**

propagation. Extending the action of; transmitting, carrying forward, in space or time or through a medium, as the propagation of sound or light waves.

propagation, radio, velocity of. See: **radio propagation, velocity of.**

propellant. A propelling agent; specifically, a low explosive substance or mixture of substances which, through burning, can be made to produce gases at controlled rates and to provide the energy necessary to propel a projectile or missile. Propellants may be classified as liquid propellants and solid propellants according to physical state. Liquid propellants, used primarily in rocket engines, may be classified as monopropellants, bipropellants, and sometimes multipropellants, according to the number of unmixed chemicals fed to the combustion chamber. Solid propellants, used primarily in gun type weapons and rocket motors, may be classified according to the number of basic explosives which they contain. A single base propellant contains only one explosive ingredient. A common example of this is pyropropellant. A double base propellant contains two explosive ingredients, commonly nitrocellulose and nitroglycerin. Ballistite, the standard propellant used in US mortars, is of this type. See also: **liquid propellant; pyropropellant; solid propellant; triple base propellant.**

propellant chamber. See: **chamber.**

propellant charge. See: **charge, propelling.**

propellant, cool. A propellant which burns with a relatively low temperature, thus making it easier to obtain flashlessness and reducing gun tube erosion.

PROPELLANT DRAINING KIT, GUIDED MISSILE. An item consisting of adapters, fittings, nozzles, vent pipes, hose assemblies, and the like, designed to facilitate draining guided missile propellant tanks.*

PROPELLANT FILLING KIT, GUIDED MISSILE. An item consisting of adapters, fittings, nozzles, vent pipes, hose assemblies, and the like, designed for filling guided missile propellant tanks.*

propellant fouling. Bits of unburned or partially burned propellant left in the bore after firing. Formerly called 'powder fouling.'

propellant granulation. See: **granulation.**

propellant increment charge. See: **CHARGE, PROPELLANT INCREMENT.***

PROPELLANT MIXTURE, GUIDED MISSILE. A premixed item of liquid explosive material designed for use with oxidizers to produce the required propulsion effects in guided missiles.*

PROPELLANT POWDER. A low explosive of fine granulation which, through burning, produces gases at a controlled rate to provide the energy for propelling a projectile. Restricted to small arms propellants, for which the grain size is small. In larger grain form it is called simply 'propellant.' See also: powder; propellant.

PROPELLANT SHUTOFF, GUIDED MISSILE. A self-contained emergency control unit designed to instantaneously disable the propulsion system of a guided missile.*

PROPELLANT, SOLID, GUIDED MISSILE. A premixed item of solid explosive material containing an adequate supply of available oxygen in its chemical composition. It is formed by cast or extrusion process and specifically designed to produce the required propulsion effects in guided missiles.* Cf: propellant; PROPELLANT MIXTURE, GUIDED MISSILE.

propellant tag. Linen tag attached to a propellant bag, carrying information about the propellant charge, such as the name of the loading plant, the date of loading, and the caliber and model of the gun for which it was made. Formerly called 'powder tag.'

propellent. Driving forward, able or tending to propel. Should not be used as a noun in place of propellant (which see).

PROPELLER SHAFT. A shaft designed to accommodate a UNIVERSAL JOINT at one or both ends.* *Specif.* In automotive vehicles it is the shaft making the driving connection between the transmission and the driving axle.

propelling charge. See: charge, propelling.

propelling charge explosive train. See: explosive train.

proportional control. See: control, proportional.

proportional limit. The greatest unit stress which a metal is capable of withstanding without deviating from the law of proportionality of stress to strain.

proprietary item. An item in which the owner has a property right or interest enabling him in accordance with recognized principles of law to exclude others from its use or to authorize use thereof subject to such restrictions as he may appropriately impose. This often means that the item is obtainable only from a single source of supply.

propulsion. (prpln) See: bifuel propulsion; jet propulsion; monofuel propulsion; reaction propulsion; rocket propulsion.

propulsion system. *Missiles.* A complete missile propulsion mechanism generally operates in two phases; the launching phase and the cruising phase. During the launching phase, the missile is accelerated to cruising speed by a unit of high thrust called a 'booster unit' or JATO. During the cruising phase, a unit of relatively lower thrust (sometimes called

a 'sustainer unit') is used to keep the missile at the desired flight speed. The complete propulsion system may employ only 1 of the 2 phases or both, depending on the target, missile, and tactical mission. There are four basic propulsion units that have or may have application to guided missiles. They are rocket, pulsejet, ramjet, and turbojet motors. Each of these have their own characteristics which determine their use.

propulsive force. A force that drives or impels.

The propulsive force of a gun results from the energy released by burning the propellant; that of an airplane from the energy of its fuel.

protection complete penetration. Penetration in which a fragment or fragments of either the impacting projectile or the plate are thrown to the rear of the plate with sufficient energy to perforate a .020-inch aluminum-alloy, 24ST, sheet, or its equivalent, when placed so as to receive those fragments passing from the rear of the plate. When it is possible to observe that these conditions are being met without the use of the sheet, as in heavier plate testing, the sheet is omitted.

protection partial penetration. Penetration which approaches but does not fulfill the requirements for protection complete penetration.

protective fire. Fire delivered by supporting guns and directed against the enemy to hinder his fire or movement against friendly forces.

PROTECTOR, THREAD, BREECHBLOCK. A device designed to prevent damage to the mating threads of a breechblock during assembly or disassembly operations. May assist in positioning components being assembled.*

protoscope. Device in a tank, etc., similar to the periscope of a submarine. It enables a soldier to see around a shield without exposing himself to enemy gunfire directed at the ports of the tank or armored car.

proton. The positively charged nucleus of the atom of the light isotope of hydrogen, considered to be a nuclear constituent of all atoms. See: electron.

prototype. 1. The first complete and working member of a class, esp. applied to the first made of a given model or model series, or the first specimen of a class of weapons or any other piece of equipment, such member or specimen serving, or intended to serve, as the pattern or guide for subsequently produced members of the same class. See: production model; production prototype. 2. Built or produced in prototype only, limited in production to a single specimen, i.e., to the prototype itself. 3. Also used in the sense of 'precursor,' as in 'the V-2 was the prototype for the weapons of the future.'

PROTRACTOR, FIN POSITION. A protractor specifically designed for measuring the angular position of guided missile fins.*

proving ground. (PG) An area or location where equipment, ammunition, or weapons are tested or proved.

proximity fuze. See: FUZE, PROXIMITY.

prpln (*abbr.*). 'Propulsion.'

PS (*abbr.*). 'Trichloronitromethane' (chloropicrin, war gas).

pseudo-velocity. The vertical projection of the actual velocity on the line of departure. (Used in Siacci method of computation of trajectories.)

psi (*abbr.*). 'Pounds per square inch.'

psychological warfare. The planned use, by a nation or group of nations, of propaganda and related informational measures directed toward enemy, neutral, or friendly groups, to influence opinions, emotions, attitudes, and behavior in such a manner as to support the policies and aims of the using nation or group of nations.

PTX1. Explosive consisting of RDX, tetryl and TNT.

PTX2. Explosive consisting of RDX, PETN and TNT.

Pueblo Ordnance Depot. Ordnance Corps field installation, located at Pueblo, Colorado.

pull-out. The act of changing from a power dive to level (or climbing) flight.

pull-out, sudden. See: **pull-up, sudden**.

pull-type equilibrator. See: **equilibrator**.

pull-up. A maneuver in the vertical plane in which the aircraft is forced into a short climb, usually from approximately level flight. See: **zoom**.

pull-up, sudden. *Stress analysis*. A loading condition resulting from a sudden application of up-elevator. Also called 'sudden pull-out.'

pulse. 1. A single disturbance of definite amplitude and time length, propagated as a wave or electric current. 2. *Radar*. A radar transmission signal of very short duration, from 1 to 50 microseconds. Its transmission is accurately timed at intervals, ranging from 1/60 to 1/4000 second, which will permit correlation of the transmitted pulse with the image on the oscilloscope representing the reflection of the same pulse.

pulse amplitude. A general term indicating the magnitude of a pulse. For specific designation, adjectives such as average, instantaneous, peak, rms (effective), etc., should be used to indicate the particular meaning intended. Pulse amplitude is measured with respect to the normally constant value unless otherwise stated.

pulse-amplitude modulation. (PAM) Amplitude modulation of a pulse carrier.

pulse amplitude, RMS (effective). See: **RMS (effective) pulse amplitude**.

pulse bandwidth. Pulse spectrum bandwidth; the smallest continuous frequency interval outside which the amplitude of the spectrum does not exceed a prescribed fraction of the amplitude at a specified frequency. This spectrum amplitude may be less than the prescribed amplitude within the interval.

pulse carrier. A pulse train used as a carrier.

pulse coder. A circuit which sets up a plurality of pulses disposed in an identifiable pattern.

pulse decay time. The interval between the instants at which the instantaneous amplitude last reaches specified upper and lower limits, namely, 90 percent and 10 percent of the peak-pulse amplitude unless otherwise stated.

pulse duration. The duration in time of a pulse, esp. of an electromagnetic wave.

The pulse duration of a radar wave or the like is measured between points of zero value, or some other specified points.

pulse-duration modulation. A form of pulse-time modulation in which the duration of a pulse is varied.

The terms 'pulse-width modulation' and 'pulse-length modulation' are also used to designate this system of modulation but the term 'pulse-duration modulation' is preferred.

pulse interleaving. A process in which pulses from two or more sources are combined in time-division multiplex for transmission over a common path.

pulse interval. See: **pulse spacing**.

pulse-interval modulation. A form of pulse-time modulation in which the pulse spacing is varied.

pulsejet. Short for 'pulsejet engine.' See: **ENGINE, PULSE-JET**.

pulsejet engine. See: **ENGINE, PULSE-JET**.

pulse length. The time duration of the transmission of a pulse of energy, usually measured in microseconds or in the equivalent distance in yards, miles, etc., represented by the pulse signal on a radar scope.

pulse-position modulation. (PPM) A form of pulse-time modulation in which the position in time of a pulse is varied.

pulse regeneration. The process of restoring pulses to their original relative timings, forms, and/or magnitudes.

In many devices, pulses may become distorted due to phase or amplitude distortion, limiting, or other processes. It is often desirable to restore the pulse to something resembling its original form before it has become so distorted that the original information which it contains is completely destroyed.

pulse repetition rate. The average number of pulses per unit of time.

pulse rise time. The interval between the instants at which the instantaneous amplitude first reaches specified lower and upper limits, namely, 10 percent and 90 percent of the peak-pulse amplitude unless otherwise stated.

pulse spacing. The interval between the corresponding pulse times of two consecutive pulses.

The term 'pulse interval' has been dropped because it may be taken to mean the duration of the pulse instead of the space or interval from one pulse to the next. Neither term means the space *between* pulses.

pulse spectrum. The frequency distribution of the sinusoidal components of the pulse in relative amplitude and in relative phase; pulse frequency spectrum.

pulse spike. An unwanted pulse of relatively short duration superimposed on the main pulse.

pulse-time modulation. Modulation in which the time of occurrence of some characteristic of a pulse carrier is varied from the unmodulated value.

pulse train. A group of pulses of similar characteristics.

pump, constant stroke. A fuel pump which delivers a definite quantity of fuel on each stroke, the quantity needed to maintain the speed of the engine being controlled by bypassing part of the fuel back to the supply tank.

pump, variable stroke. A fuel pump whose stroke is lengthened or shortened so as to meter the correct charge to meet varying operating conditions.

punch, electronic calculating. *Electronic computers.* A card handling machine which reads a punched card, performs a number of sequential operations and punches the result on a card.

PUNK, STICK. A preformed material in cylindrical form, which when ignited smolders without flame, to provide means for igniting safety fuse.

push-type equilibrator. See: *equilibrator.*

PWP (abbr). Chemical agent, 'plasticized white phosphorus' (smoke).

pyro (abbr). 'Pyrotechnic.'

pyrocellulose. Nitrocellulose having a lower nitration than guncotton, used in smokeless propellants. Contains approximately 12.6 percent nitrogen. Also called 'pyrocotton.'

pyrocotton. See: *pyrocellulose.*

pyrometer. *General.* An instrument for measuring temperatures by electrical means, especially those beyond the range of mercurial thermometers.*

PYROMETER, OPTICAL. A pyrometer which measures the quality and intensity of light emitted from a hot body, or glowing material by comparison with a standard source of light and indicated by the position of a pointer relative to a graduated temperature scale.*

PYROMETER, RECORDING. A pyrometer which utilizes the effect of temperature variations to change the characteristics of an electric constant and this difference in electric potential transcribed to a chart.*

pyropropellant. Single base propellant consisting principally of nitrocellulose. See: *propellant.*

pyrotechnic. Of or pertaining to pyrotechnics.

pyrotechnic code. Significant arrangement of the various colors and arrangements of fireworks, signal lights, or signal smokes used for communication between units or between ground and air.

pyrotechnic outfit. See: *SIGNAL KIT, PYROTECHNIC PISTOL.*

pyrotechnic pistol. See: *PISTOL, PYROTECHNIC.*

pyrotechnic projector. See: *PROJECTOR, SIGNAL, GROUND.*

pyrotechnics. Items used for both military and non-military purposes, such as producing a bright light for illumination, or colored lights or smoke for signaling, and which are consumed in the process.

pyrotechnic signal. Signal (which see) designed for military use to produce a colored light or smoke, for the purpose of transmitting information.

pyroxylin. Nitrocellulose containing less than 12.5 percent nitrogen.

Q

Q clearance. A special security clearance granted by the Atomic Energy Commission, based upon an investigation conducted by the Federal Bureau of Investigation.

A Q clearance is required by the AEC for those military, civilian, and contractor personnel who are required by their duties to obtain access to restricted data either directly from a contractor or as a licensee of the AEC.

Q-factor. 1. A rating applied to coils, capacitors, and resonant circuits, equal to the reactance divided by resistance. 2. Mechanical or electrical systems, the ratio of energy stored to energy dissipated. 3. In bombing, a factor representing the ratio of the velocity of the differential ballistic wind to the velocity of the wind at release altitude.

QMC (abbr). 'Quartermaster Corps.'

qty (abbr). 'Quantity.'

qty-dis (abbr). 'Quantity-distance.'

quadrant. 1. One of the four parts into which a plane is divided by vertical and horizontal axis. 2. Instrument with a graduated scale used in laying the piece for elevation. It measures the vertical angle which the axis of the bore makes with the horizontal. When attached to the elevating mechanism as a part thereof, it is called **elevation quadrant** if graduated in mils or degrees, or **range quadrant** if graduated in range units. When it consists of a separate unattached instrument for hand placement on a reference surface it is called a **gunner's quadrant**.

quadrant angle of departure. Vertical angle between the horizontal and the line of departure of a projectile.

quadrant angle of elevation. See: **quadrant elevation**.

quadrant angle of fall. The vertical acute angle at the level point, between the horizontal and the line of fall of a projectile.

quadrant elevation. Vertical angle between horizontal and axis of bore of gun which exists just prior to firing; **quadrant angle of elevation**.

quadrant mount. Device on a gun that holds the gunner's quadrant while the gun is being laid in elevation; **quadrant seat**.

quadrant seat. See: **quadrant mount**.

quadrant sight. Sighting instrument on a gun that is used in laying the gun in elevation. The quadrant

sight is used in conjunction with a telescope that is used for laying the gun for direction.

quadricycle. A four-wheeled motor vehicle with a bicycle seat for the driver, and a two-wheeled fore-carriage steered by handle bars.

Quail. An air-to-surface missile decoy under development for the Air Force.

quality assurance. System of assuring that material accepted is in accordance with requirements. This involves the techniques followed in determining the acceptability of products, such as defining a lot, establishing acceptance criteria, determining methods of inspection, determining classification of defects and setting required quality levels.

quality control. The exercise of such influence as to assure that a service or product measures up to a desired quality. See: **quality assurance**.

quantity. (qty) *Electronic computers.* A positive or negative real number in the mathematical sense. The term 'quantity' is preferred to the term 'number' in referring to numerical data; the term number is used in the sense of natural number and reserved for 'the number of digits,' the 'number of operations,' etc.

quantity-distance tables. The regulations pertaining to the amounts and kinds of explosives that can be stored and the proximity of such storage to buildings, highways, railways, magazines, or other installations. See also: **American Table of Distances**.

quantizer. A device which measures the magnitude of a time-varying quantity in multiples of some fixed unit, or quantum, at a defined instant or repetition rate and delivers a response, usually in pulse code or digital form, equal in magnitude to the measured number of quanta.*

Quartermaster Corps. (QMC) An Army corps providing rations, clothing and other supplies and services, and commanded by the Quartermaster General.

quickmatch. Fast burning fuse made from a cord impregnated with black powder.

quickness. General term, expressing the mass rate of gas evolution of a propellant in a quantitative sense. Basically a function of the propellant geometry.

quickness, relative. Ratio of the quickness of a test propellant to the quickness of a standard propellant, measured at the same initial temperature and loading density in the same closed chamber.

R

rabal. Determination of varying atmospheric conditions by use of a *radiosonde balloon*. Rabals are reports obtained in this manner. Cf: *pibal*.

race. 1. A track or channel in which something rolls or slides, as a slide for a shuttle; a groove for the balls in a bearing. 2. A circular ring upon which travel the rollers supporting a revolving superstructure, such as the roller race of a revolving crane, or of a rotating gun mount. 3. To speed (an engine or motor) without a working load or in disengagement from the transmission.

RACE, BEARING, INNER. An inner component of a ball or roller bearing which provides a contact surface for the rolling elements of the bearing.*

RACE, BEARING, OUTER. An outer component of a ball or roller bearing which provides a contact surface for the rolling elements of the bearing.

racer. Turntable on which a heavy gun is turned to left or right; a *race* (sense 2).

RACK, BOMB, AIRCRAFT. A suspension device permanently fixed to an aircraft. It is designed for attaching, arming and releasing of one or more bombs. It may also be utilized to accommodate other items such as mines, rockets, torpedoes, fuel tanks, rescue equipment, sonobuoys, flares or the like.*

RACK, BOMB EJECTOR, AIRCRAFT. A suspension device permanently fixed to an aircraft. It is designed for attaching, arming, releasing and ejecting one or more bombs. It may also be utilized to accommodate other items, such as torpedoes, rockets, mines, etc.*

RACK, LOADING, GUIDED MISSILE. An item of open framework consisting of side and end trusses, specifically designed to form two parallel tracks on which a guided missile is stored prior to loading on a launcher.*

racon (*abbr.*). 'Radar beacon.'

RAD (*abbr.*). 'Research and Development.'

RAD. [From *Radiation Absorbed Dose*.] A unit of absorbed dose of ionizing radiation. The RAD, 100 ergs/gram, is a measure of the energy imparted to matter by ionizing radiation per unit mass of irradiated material at the place of interest.

rada (*abbr.*). 'Radioactive.'

Radan. [Coined: *radar Doppler automatic navigator*.] Name given to a navigation system which operates independently of any ground-based or celestial aids.

radar. 1. Any of certain methods or systems of using beamed and reflected radio-frequency energy (radio waves) for detecting and locating objects, for measuring distance or altitude, or for certain other purposes, such as navigating, homing, or bombing. 2.

The electronic equipment, sets, or devices used in any such system.

In its original and principal application, 'radar' has reference to a method or system of detecting and finding the range of objects by means of beamed radio-frequency energy, the objects in the path of the beam reflecting part of the energy back to the source of transmission. The time interval between the transmission of the energy and the reception of the reflected energy establishes the range of any object in the beam's path, the reflected energy being displayed on a cathode-ray screen in such a manner as to indicate this information. In addition, many radar sets also display such information as azimuth, elevation, and direction of movement of the object.

The principal military use of radar is in the detection and location of airborne aircraft, but numerous other uses have arisen, e.g., in air navigation and air traffic control, in altitude measurement, in reconnaissance and mapping, in bombing and homing, in storm detection, etc.

radar altitude. See: **absolute altitude**.

radar background. See: **radar clutter**.

radar beacon. (*racon*) A radar transmitter, including its antenna and other associated equipment, that emits radar waves for pickup, the waves then being displayed or used to cause a responder to react.

radar bombing. Any type of bombing in which radar is used to locate the target or aiming point, or to aid in positioning the bombing aircraft at the proper release point for bombing, esp. under conditions of poor visibility.

radar bombsight. An airborne radar set used to sight the target, solve the bombing problem, and drop bombs, as in **synchronous radar bombing**.

radar boresight. A boresight used in harmonizing a radar-controlled gun.

RADAR CHRONOGRAPH SET. A complete set for measuring projectile velocities by radar.* See also: **chronograph**.

radar clutter. Visual evidence on the radar indicator screen of **sea return**, or **ground return**, which if not of particular interest, tends to obscure the target indication. Usually called merely 'clutter.' See also: **grass; noise; snow**.

radar, continuous-wave. A system in which a transmitter sends out a continuous flow of radio energy to the target which reradiates (scatters) the energy intercepted and returns a small fraction to a receiving antenna. Since both the transmitter and receiver are operating simultaneously and continuously, it is impractical to employ a common antenna, and usually two similar structures are employed side-by-side and so oriented that only a small fraction of the

- transmitted power leaks directly into the receiver. The reflected wave is distinguished from the transmitted signal by a slight change in radio frequency.
- The continuous-wave method, while not so adaptable to military needs, has many interesting properties, such as its ability to distinguish moving targets against a stationary reflecting background and its greater conservation of bandwidth than pulse radar.
- radar control.** Guidance, direction, or employment exercised over an aircraft, guided missile, gun battery, or the like, by means of, or with the aid of, radar.
- radar countermeasure.** (RCM) Usually *pl.* Any electronic countermeasure against radar. See: **electronic countermeasure.**
- RADAR COURSE DIRECTING CENTRAL.** A system comprising a number of associated electronic sets which are used to direct the course of a moving object (such as an aircraft, ship, tank, or missile) to a target by means of radar techniques. May be manual or automatic in operation.*
- radar deception.** Deception of the enemy by electronic countermeasures against his radar.
- radar dish.** See: **dish, radar.**
- radar fire control.** Fire control by means of radar. See: **fire control.**
- radar gun-layer.** A radar device which tracks a target and aims a gun or guns automatically.
- radar homing.** Homing on radar emanations. See: **home.**
- radar horizon.** The effective surface detection range of radar.
- RADAR MISSILE TRACKING CENTRAL.** A number of associated electronic sets which, when used with additional electronic sets, provides facilities for recording and/or indicating signals received simultaneously from a transponder-equipment missile and the additional electronic sets. The received signals provide free-space position data of the missile.*
- radar picket.** Any ship stationed at a distance from the force protected, for the purpose of increasing the radar detection range.
- radar, pulse.** Radar in which sharp bursts of radio energy, somewhat like the bursts of acoustic energy from the barrel of a machine gun, are sent out from the transmitter. When these bursts, or 'pulses,' encounter a reflecting object, they are reflected as discrete echos which are detected by the radar receiver during the interval between the transmitted pulses. The pulse method has the ability to measure distances and engage several targets simultaneously.
- radar range.** The maximum distance at which a radar set is ordinarily effective in detecting objects; *specif.*, the distance at which a radar set can detect a specified object at least fifty percent of the time.
- radar, range of.** The maximum usable distance to the target of a radar system; under free-space conditions, the range varies as the fourth power of the transmitted power, the receiver power sensitivity, the target echo area, and the square of the antenna gain.
- radar reconnaissance.** Reconnaissance by means of radar to determine the location, disposition, and strength of enemy forces and to determine the nature of the terrain.
- radar report.** Information about the position of friendly or enemy aircraft, obtained with radar apparatus. The radar report usually is sent to an aircraft warning system filter center or information center.
- radar scan.** 1. The motion of a radar beam as it searches for an object of interest, or target. 2. The path or pattern described by this motion. 3. The process of directing a radar beam. See also: **scan.**
- radarscope.** The cathode-ray oscilloscope or screen in a radar set.
- radar search.** See: **radar reconnaissance.**
- RADAR SET.** A complete set for determining the presence and location of objects.* See: **radar.**
- radar silence.** A condition existing when radar operations are stopped; the period of time during which this condition prevails.
- RADARSONDE SET.** The components and items required to operate a complete electronic system for automatically measuring and transmitting high altitude meteorological data from a balloon, kite, or rocket by pulse modulated radio waves when triggered by a radar signal. May include operating spares or such components and items as electron tubes, batteries.*
- radar station.** The place, position, or location from which, or at which, a radar set transmits or receives signals.
- radar target.** See: **TARGET, RADAR.**
- radar wind.** Wind of which the movement, speed, and direction is observed or determined by radar tracking of a balloon carrying a radiosonde, a radio transmitter, or a radar reflector. See: **rawin** (sense 1).
- RADC** (*abbr.*) 'Rome Air Development Center.'
- Radford Arsenal.** Ordnance Corps field installation, located at Radford, Virginia.
- radiac.** (*Radiation detection, identification, and computation.*) The act or process of detecting, identifying, and measuring the intensity of nuclear radiation in an area.
- RADIACMETER.** An item specifically designed to detect and measure radioactivity. It may include a radiac computer.*
- RADIAC SET.** All the components and items required for a complete radioactivity detecting, indicating and measuring system. It may or may not include operating spares, or items such as the following: cable assemblies, and power sources. It must consist of two or more components.*
- radial band pressure.** The pressure which is exerted on the rotating band by the walls of the gun tube, and hence against the projectile wall at the band seat, as a result of the engraving of the band by the gun rifling. Since the same pressure is exerted against

the gun tube, it must be taken into account in gun design as well as in projectile design.

radial engine. 1. An engine with one or more stationary rows of cylinders arranged radially around a common crankshaft. 2. In a more general sense, any engine having the cylinders arranged radially around the crankshaft.

radial expansion. A method of making gun tubes by expanding steel cylinders under internal pressure until the interior diameter has been permanently enlarged. This method is also known as *cold working* and *auto-frettage*. (The latter is a French term meaning 'self-hooping'.)

As generally practiced in the US, a hollow steel cylinder (often consisting of a centrifugal casting) with an interior diameter slightly less than the caliber desired is subjected to an interior hydraulic pressure of sufficient intensity to enlarge the bore permanently about 6 percent. The outside diameter of the cylinder is enlarged only very slightly (about 1 percent). When the hydraulic pressure is released, the outer layers tend to shrink to their original dimensions and the inner layers tend to maintain their enlarged diameter, thus putting the critical inner layers under compression by the contracting force of outer layers. Final machining and rifling is, of course, still required. This method, like the built-up and wire-wrapped methods of gun construction, gives the gun a high resistance to internal (propellant) pressure since a good part of the internal pressure is required to relieve the inner layers of their compression before they are subjected to any tension. The method, at least for some calibers, offers advantages of simplicity, reduced cost and increased production.

radial stress. See: **stress, circumferential.**

radiation. 1. The transmission of energy through space in the form of electronic waves. 2. Nuclear radiation (which see).

radiation absorbed dose (dosage). The total quantity of ionizing radiation absorbed by an individual or any mass of material exposed to radiation. If the radiation is X or gamma and the mass is free air, the unit of measure is the roentgen.

radiation dosage. Total quantity of radiation to which a person is exposed over a period of time. It is measured in roentgens.

radiation dose rate. The radiation dose (dosage) absorbed per unit time. The common unit of measure for X or gamma radiation is roentgen or milli-roentgen per hour.

radiation intensity. The amount of radiant energy per unit time passing through a unit area perpendicular to the line of propagation at the point in question. This term is often used incorrectly when dose rate is intended.

radiator. A device for radiating the heat out of a substance, as water or oil, esp. such a device connected to an engine.

radiator temperature drop. In liquid-cooled engines, the difference in temperature of the liquid between

the inlet and outlet of the radiator. A good commercial value is 10° to 12°F.

radioactive. (rada) Emitting nuclear radiations; possessing radioactivity.

radio altitude. See: **altitude, absolute.**

radio beacon. A radio transmitter which emits a distinctive or characteristic signal for the determination of bearings, courses, or locations.

radio channel. A channel (which see) for radio transmission.

radio countermeasures. (RCM) Electrical or other techniques depriving the enemy of the benefits which would ordinarily accrue to him through the use of any technique employing the radiation of radio waves. It includes benefits derived from radar and intercept services.

radio direction finder. (RDF) Radio receiving equipment incorporating an azimuth scale and a directional antenna system. It is employed to determine the azimuth of incoming radio waves.

radio fix. 1. The location of a friendly or enemy radio transmitter determined by finding the direction of the radio transmitter from two or more listening stations. 2. The location of a ship or aircraft by determining the direction of radio signals coming to the ship or aircraft from two or more sending stations, the locations of which are known.

radio frequency. (RF) See: **frequency, electronic.**

radio-frequency pulse. A radio-frequency carrier amplitude modulated by a pulse. The amplitude of the modulated carrier is zero before and after the pulse. Coherence of the carrier (with itself) is not implied.

radio fuze. See: **FUZE, PROXIMITY.**

radiogoniometry. Science of locating a radio transmitter by means of taking bearings on the radio waves emitted by such a transmitter.

radiographic tests. Tests using radiography (which see).

radiography. Nondestructive examination of matter by means of X-rays or gamma rays. The rays are permitted to impinge on a fluorescent screen for temporary work or photographic film for permanent record. Used in metal industry, research and analysis, for purposes such as determining the soundness of castings and welded joints.

radio guided bomb. See: **bomb, radio guided.**

radiolocation. The determination of relative direction, position, or motion of an object, or its detection, by means of the constant velocity of rectilinear propagation characteristics of radio waves.

radiological. Of or pertaining to radiation, esp. nuclear radiation; of or pertaining to the study and use of radioactivity, radioactive substances, atomic weapons, or the like.

radiological agent. Any of a family of substances that produce casualties by emitting radiation.

radiological defense. The methods, plans, and procedures involved in establishing and exercising defensive measures against the radiation effects of an

attack by atomic weapons or radiological warfare agents. It encompasses both the training and the implementation of these methods, plans and procedures. Because of the close association of the other effects of atomic weapons with the radiological effects, the term often connotes atomic defense. See: **atomic defense**; **radiological warfare**.

radiological warfare. The employment of agents or weapons to produce residual radioactive contamination as distinguished from the initial effects of a nuclear explosion (blast, thermal, and initial nuclear radiation).

radio navigation. Air navigation by means of radio navigational aids or navigation systems using radio.

Radio navigation includes radio direction-finding, the use of radio ranges, radio compasses, radio homing beacons, loran, etc.

radio position finding. Process of locating a radio transmitter by plotting the intersection of its azimuths as determined by two or more radio direction finders.

radio propagation, velocity of. The velocity of radio propagation, within the accuracy demanded of radar equipment, is usually taken as the velocity of light, 2.998×10^8 m/sec.

radio proximity fuze. See: **FUZE**, **PROXIMITY**.

radio range. 1. The reach of a radio beam or the reach and scope of radio beams emitted by a given station for use as directional signals for airborne aircraft; the flight paths, course directions, and position signals provided by these beams. 2. The station or installation that sends such directional beams out.

Radio ranges are classified by: a. The frequencies transmitted. These are low frequency (LF), medium frequency (MF), or very high frequency (VHF). b. The sensory organ used for receiving the signals. These are visual or aural, or a combination of the two. c. The number of directions in which on-course ranges, the four-course ranges, and the omnidirectional. d. The kind of antenna system used, such as the loop-type radio range.

RADIOSONDE SET. The components and items required to operate a complete electronic system for automatically measuring and transmitting high altitude meteorological data by radio from a balloon, kite, or rocket.*

radius of action. Maximum distance a ship, airplane, or vehicle can travel away from its base along a given course with normal combat load and return without refueling, allowing for all safety and operating factors.

radius of gyration. The distance from the axis of rotation at which the total mass of a body might be concentrated without changing its moment of inertia. The product of total mass and the square of the radius of gyration will give moment of inertia.

radius of rupture. Greatest distance from the center of an underground explosive charge at which the explosion will be destructive.

radius of safety. *Atomic explosion.* The horizontal

distance from ground zero beyond which the weapon effects on friendly troops are acceptable.

radius of visibility. Greatest distance in every direction that an observer at a given point can see, especially the distance an observer in a plane can see.

radius rod. A rod which restricts movement of a part to a given arc.

radix. *Electronic computers.* The integer of whose successive powers the digits of a number are the coefficients.

RADOME. An item which incloses an antenna. It is specifically designed to permit maximum passage of radio frequency energy through it, while providing protection to the antenna from weather. The item may also inclose the antenna support, and rotating mechanism. It may be flexible or rigid, streamlined or irregular shaped. May also include pressurizing mechanism and anti-icing or de-icing equipment.*

railhead. Supply transfer point on a rail line at which supplies are unloaded and forwarded or distributed usually by other means of transportation or distributed to or by a supply activity at that location. Comparable installations are: truckheads, navigation-heads, aerial ports.

railhead distribution. Supply point distribution in which supplies are issued at a railhead.

railing. In electronics, an image on a radar indicator resembling fence railings, caused by radar pulse-jamming at high recurrence rates (50 to 150 kilocycles).

RAIL, LAUNCHING-HANDLING, GUIDED MISSILE. An item of welded steel construction specifically designed to support and position a guided missile-rocket motor combination during propellant filling, warhead installation and launching.*

railway artillery. Heavy artillery, given mobility by mounting on railway mounts or carriages. No longer in use by US forces.

railway mount; railway carriage. Mount for railway artillery. No longer in use by US forces, but still of interest for possible future application.

Railway mounts are classified, according to the method of absorbing recoil energy, as *sliding mounts*, *rolling mounts*, and *platform mounts*. In the first two types there is no recoil system and the energy is absorbed by sliding or rolling with the brakes set. The platform mount is equipped with a recoil system and remains in place without movement.

railway torpedo. See: **TORPEDO**, **SIGNALING**, **RAILROAD**.

rake. To sweep a target, esp. a ship or a column of troops, with gun or cannon fire. Hence, *raking fire*. Cf: *strafe*.

ram. 1. The forward motion of an air scoop or air inlet through the air. 2. **Ram effect** (which see). 3. *Capitalized.* A popular or code name for a certain large aircraft rocket with a shaped charge. 4. Seat a projectile in the bore of a gun. 5. Run into something head on.

ram effect. The increased air pressure in a jet engine or in the manifold of a piston engine, due to ram (which see, sense 1).

ramjet. 1. A ramjet engine. 2. An aircraft or missile using a ramjet engine.

ramjet engine. See: **ENGINE, RAMJET.**

rammer. 1. Device for driving a projectile into position in a gun. It may be hand or power operated. 2. Tool used to remove live projectiles from the bore of a gun.

rammer head. Replaceable end of a rammer.

ramming. 1. In air combat, an act or instance of deliberately flying or crashing into an enemy aircraft, engaged in as a tactic of last resort. 2. A ram effect.

ramp. A sloping passageway between levels used as a bridge between two points. May or may not have treadways.*

RAMP, LOADING, VEHICLE. A ramp which is used for loading cargo on a ship, railroad car, truck, trailer, aircraft, and the like.*

ramp sight. Type of metallic sight in which the aperture is raised or lowered by moving it forward or backward on an inclined ramp.

R and D (abbr). 'Research and development.'

range. (rg) 1. The capability of a rocket missile, guided missile, or the like that indicates how far it can fly or be projected; also, the capability of a gun, radar transmitter, etc., that indicates how far it can project a missile or radiate effective waves, or otherwise exert influence at a distance under given conditions; also, the capability of a place measured by the distance to which a missile, radar wave, or the like can be projected from it, as in 'the range of a launching site.' 2. The measured or estimated distance between one object and another, esp. as applied to the distance between a gun and its target, between a radar set and its object of interest, or between an aircraft and its base, as in 'we are now at a range of ten miles from base.' 3. In bombing, the horizontal distance that a bomb travels after release to the moment of impact. Also called 'actual range.' See next sense. 4. The factor of forward distance that a bomb or other missile travels after release, as distinguished from the factor of azimuth, as in 'the azon bomb is controlled in azimuth but not in range.' 5. An area set up for bombing practice, gunnery practice, or harmonization, as in 'bombing range.' 6. The capability of an aircraft that indicates how far it can fly under operating conditions from the moment of takeoff to the time when its fuel supply is exhausted. 7. To find the range of a target; to adjust a gun to the range of a target.

range adjustment. Correction of firing data so that the impact or burst will be on the target with respect to range.

range and azimuth indicator. See: **INDICATOR, AZIMUTH-RANGE.***

range and height indicator. See: **INDICATOR, HEIGHT-RANGE.***

range angle. Angle between the aircraft-target line and the vertical line from the aircraft to the ground at the instant a bomb is released. Also called 'dropping angle.'

range calibration. Adjustment of a radar set so that when 'on target' the radar set will indicate the correct range.

range correction. Changes of firing data necessary to allow for deviations of range due to weather, materiel, or ammunition.

range correction board. Device with which the correction to be applied to a gun is computed mechanically. The correction that is obtained allows for all nonstandard conditions, such as variations in weather and ammunition, and it is known as the 'ballistic correction.'

range corrector setting. Degree to which the range scale of a position-finding apparatus must be adjusted before use.

range determination. Process of finding the distance between a gun and a target, usually by firing the gun, by estimating with the eye, by the use of a range finding instrument, or by plotting.

range deviation. Distance by which a projectile strikes beyond, or short of, the target. It is the distance as measured along the gun-target line or along a line parallel to the gun-target line.

range difference. Difference between the ranges from any two points to a third point; especially, the difference between the ranges of a target from two different guns.

range disk. Graduated disk, used for range setting, connected mechanically with the elevating mechanism of a gun. A range disk usually is graduated in yards of range and degrees of elevation.

range dispersion diagram. Chart indicating the expected percentage of shots fired with the same data which will fall into each of eight areas within the dispersion pattern for ranges.

range drum. Graduated indicator of cylinder type, connected mechanically with the elevating mechanism of a gun, used for range setting.

range error. Difference between the range to the point of impact of a particular projectile and the range to the center of impact of a group of shots fired with the same data.

range estimation. Rough estimate of the distance to a target or other object.

range finder. See: **RANGE FINDER, FIRE CONTROL.**

RANGE FINDER, FIRE CONTROL. An instrument used to determine the unknown distance of a target from the range finder.*

range flag. Red flag displayed on or near a target range during firing practice as a warning that firing is being conducted.

- range ladder.** A naval term used to describe a method of adjusting gunfire by firing successive volleys; starting with a range which is assuredly over or short and applying small uniform range corrections to the successive volleys until the target is crossed.
- range probable error.** Error in range that a gun or other weapon may be expected to exceed as often as not. Range probable error is given in the firing tables for the gun, and may be taken as an index of accuracy of the piece.
- range quadrant.** Instrument used to measure elevation in laying a gun. See: **quadrant.**
- ranger.** A soldier belonging to a specially selected group of soldiers in the U. S. Army, trained esp. in raiding tactics.
The British equivalent of the ranger is the **commando.**
- range rake.** T-shaped device with pegs set in the cross. The distance between pegs subtends a definite angle at the base of the T. By sighting with a range rake, a flank observer can get a quick angular measurement of range deviation.
- range rate.** In gunnery, the rate of change in range per unit of time.
- range scale.** 1. Scale on the arm of a plotting board where the observed range of a moving target is recorded in finding firing data. 2. Graduated scale on the sight or mount of a gun used to show the elevation of the gun. 3. Table of firing data giving elevation settings corresponding to various ranges for the standard charges.
- range sensing.** Observing the location of the striking or bursting point of a projectile with respect to range, and reporting it as a hit, over, short, lost, doubtful, etc. Range sensing does not include accurate determination of distances.
- range, slant.** See: **slant range.**
- range spotting.** Watching the burst or impact of shots to note their deviation beyond, or short of the target.
- range table.** Prepared table that gives elevations corresponding to ranges for a gun or other weapon, under various conditions. A **range table** is part of a firing table.
- range-tracking element.** An element in a radar set which measures range and its time derivative. By means of the latter, a range gate is actuated slightly before the predicted instant of signal reception.
- range wind.** Horizontal component of true wind in the vertical plane through the line of fire.
- ranging.** 1. Wide-scale scouting, especially by aircraft, designed to search an area systematically. 2. Locating an enemy gun by watching its flash, listening to its report, or other similar means.
- rank (degrees of freedom of a node basis).** *Network topology.* The number of independent cut-sets that can be selected in a network. The rank R is equal to the number of nodes V minus the number of separate parts P . $R = V - P$.
- Rankine scale.** (R) A thermometer scale which uses Fahrenheit degrees and zero is absolute zero of the Fahrenheit scale. The freezing point of water is 491.69 degrees.
- rapid fire.** Rate of firing small arms or automatic weapons, faster than slow fire, but slower than quick fire.
- rarefaction.** In an atomic bomb explosion, a condition existing at the center of the explosion, in which the pressure, after a rise induced by the explosion, drops below that which existed prior to the explosion.
- rarefaction wave.** A pressure wave or rush of air or water induced by rarefaction.
The rarefaction wave (also called a 'suction wave') travels in the opposite direction to that of the shock wave directly following the explosion.
- Raritan Arsenal.** Ordnance Corps field installation, located near Metuchen, New Jersey.
- Rascal.** Name applied to an Air Force air-to-surface missile released from aircraft at long ranges from the target for strategic bombing. It is rocket powered. Employs liquid fuel engines and inertial, command radar guidance.
- raster.** A system of luminescent lines traced on the phosphor of a cathode-ray tube by motion of the cathode-ray beam. The changes of brightness in the lines produce a picture as a television picture or a radar map. This word is of German origin and is used particularly in television.
- RAT (abbr).** 'Rocket assisted torpedo.'
- rated engine speed.** The rotative speed of an engine specified as the maximum for continuous reliable performance.
- rated horsepower.** The normal rated power or military rated power of a reciprocating engine.
- rated maximum pressure.** (RMP) See: **pressures, gun.**
- rate gyro.** A gyroscopic instrument (either spinning or vibratory) that measures rate of turn.
- rate-of-climb indicator.** An instrument that indicates the rate of ascent or descent of an aircraft.
- rate of decay.** *Electroacoustics.* The time rate at which the sound pressure level (or velocity level) is decreasing at a given point and at a given time. The practical unit is the decibel per second.
- rate of detonation.** Rate at which detonation of an explosive progresses. Usually expressed in meters or yards per second. See: **detonation.**
- rate of fire.** The rapidity with which rounds are fired per minute from a weapon or group of weapons. Cf: **cyclic rate.**
- ratio, drag-weight.** See: **drag-weight ratio.**
- ratio, effective aspect.** The aspect ratio of an airfoil of elliptical planform that, for the same lift coefficient, has the same induced-drag coefficient as the airfoil or the combination of airfoils in question.
- ratio, equivalence.** See: **equivalence ratio.**
- ratio of specific heats.** The ratio of specific heat at constant pressure to specific heat at constant volume.
- ratio, reactant.** See: **reactant ratio.**
- RATO (abbr).** 'Rocket assisted takeoff.'

rat race. A particular type of radar waveguide configuration which serves the same purpose as the 'magic tee' but allows the handling of greater power.

Ravenna Arsenal. Ordnance Corps field installation, located near Apco, Ohio.

raw data. Any data or information which has not been analyzed or evaluated.

rawin. [*Radar wind* or *radio wind*; pronounced 'ray win.']. 1. Wind tracked either by radar or radio direction-finding. See: **radar wind**. 2. The action of determining the movement and velocity of winds. 3. A radiosonde, radiosonde balloon, or other specially equipped balloon used for this purpose. 4. Wind information gathered by means of radar tracking or radio direction-finding of a specially equipped balloon.

RAWIN SET. A grouping of mechanical, electrical and electronic components which, operated together, utilize radio direction finding principles to track a radiosonde or radar target in its trajectory, permitting the indication and/or recording of the elevation and azimuth angles of the balloon with respect to fixed reference points. Used for determining direction and speed of winds aloft by triangulation.*

rawinsonde (abbr). 'Radiosonde and radar wind sounding.' A radiosonde or radiosonde balloon used to rawin (sense 2); the act or procedure of obtaining weather and wind information by means of a radiosonde and receiving and tracking equipment.

razon. [*Range plus azon.*] A kind of glide bomb having movable control surfaces in the tail adjusted by radio signals to control the bomb in range and in azimuth. Hence, 'razon bomb.' See also: **azon**; **bomb, glide**.

RCM (abbr). 1. 'Radar countermeasure.' 2. 'Radio countermeasures.'

rcvr (abbr). 'Receiver.'

RD (abbr). 'Research and Development.'

rd (abbr). 'Round.'

RD 38 system. A system of interior ballistics used by the British. It is adapted to rapid solution by manual methods.

RDF (abbr). 'Radio direction finder.'

RDX (abbr). 'Cyclonite' (explosive).

reactant ratio. The ratio of the weight flow of oxidizer to fuel in a **ROCKET ENGINE**.

reaction balance. A kind of dynamometer for measuring the thrust of a rocket.

reaction engine. An engine that derives thrust by expelling its gases of combustion to the rear. See: **ROCKET ENGINE**.

reaction method. A method of finding the specific gravity of a vehicle by placing it on a trailer with a sloping bed, one end of the trailer being on a platform scale. This method is based upon the fact that the sum of the moments about an axis of rotation is zero as long as the subject body is in the static condition.

reaction motor. A motor that derives thrust by expelling its gases of combustion to the rear. See: **ROCKET MOTOR**.

reaction propulsion. Propulsion system in which a forward motion or thrust is produced by the expulsion of propellant gases through nozzles or venturi, generally longitudinally opposed to the intended line of travel.

reactor. 1. A nuclear reactor (which see). 2. A reaction engine or reaction motor.

read. *Electronic computers.* To extract information.

reader, card. *Electronic computers.* A mechanism that permits the sensing of information punched on cards by means of wire brushes or metal feelers.

reader, magnetic tape. *Electronic computers.* A device capable of restoring to a train or sequence of electrical pulses, information recorded on a magnetic tape in the form of a series of magnetized spots, usually for the purpose of transferring the information to some other storage medium.

reader, paper tape. *Electronic computers.* A device capable of restoring to a train or sequence of electrical pulses, information punched on a paper tape in the form of a series of holes, usually for the purpose of transferring the information to some other storage medium.

readiness time. The length of time required to obtain a stabilized system ready to perform its intended function. (Readiness time includes warm-up time.) The time is measured from the point when the system is unassembled or uninstalled to such time as it can be expected to perform as accurately as at any later time. Maintenance time is excluded from readiness time.

rear sight. Sight nearest the breech of a gun. It is used in aiming, usually by being put in line with a front sight and the target.

rebound clip. A clip surrounding the back and one or two other leaves of a leaf spring, usually rigidly fastened to the shortest, to distribute the load during rebounds.

rebound leaf. In a leaf spring, a leaf placed over the master leaf, of a curvature opposite to it, to limit the rebound and help carry the load imposed by it.

rebuild. To restore to a condition comparable to new by disassembling the item to determine the condition of each of its component parts, and reassembling it, using serviceable, rebuilt, or new assemblies, subassemblies, and parts. Synonymous with 'overhaul and rebuild' and 'recondition.'

rec (abbr). 'Record.'

receding log. That portion of the target's course line in which the slant range increases for successive target positions.

receiver. 1. A component specifically designed to intercept and demodulate signals propagated by a transmitter. It may include facilities for presenting intelligence such as sound output, indicator, recorder.* 2. The basic unit of a firearm, esp. a small arm, to which the barrel and other components are attached.

RECEIVER, RADAR. A receiver for signals from a radar transmitter. The signals are received after reflection. May include accessories.*

RECEIVER, RADIO. A receiver for signals from a radio transmitter(s).*

RECEIVER-TRANSMITTER, FACSIMILE. An item designed to receive and transmit messages and/or pictures by facsimile method. May include built-in power supply.*

RECEIVER-TRANSMITTER, RADAR. A single component having the dual functions of generating electromagnetic energy for transmission, and of receiving, demodulating, and sometimes presenting intelligence from the reflected electromagnetic energy. May include accessories.*

RECEIVING SET, RADAR. A complete set for intercepting, demodulating, and presenting intelligence derived from signals propagated by a compatible radar transmitter.*

RECEIVING SET, TELEMETRIC DATA. A complete electronic set designed to intercept, demodulate, and provide suitable output to enable a visual presentation and/or a permanent record of meter and/or instrument data propagated by a telemeter data transmitter. See also: **RECORDING SET, TELEMETRIC DATA**.*

receptacle box. Central electrical distribution box mounted on a gun carriage. A receptacle box serves as a distributor of the fire control data from a director to the azimuth, elevation, and fuze setter.

rechamber. To rebores or otherwise alter the chamber of a small arm, normally for the purpose of adapting it to cartridges for which not originally designed.

reciprocal laying. Method of making the planes of fire of two guns parallel by pointing the guns in parallel direction. In reciprocal laying, the two guns sight on each other, then swing out through supplementary angles to produce equal deflections from the base line connecting the two pieces.

reciprocating engine. An engine in which power is delivered in a back-and-forth movement of a piston or pistons; *specif.*, a piston-driven, internal combustion engine.

Distinguished esp. from a jet or rocket engine.

reclassify. To change the security classification of a document, piece of equipment, or the like. Cf: **declassify.** For classifications see: **defense information.**

recoil. 1. The backward movement of a gun or part thereof on firing, caused by the backward pressure of the propellant gases; the distance that a gun or part travels in this backward movement. 2. The force of this movement as exerted against something else, as in 'the recoil of the gun was felt throughout the plane.'

Recoil, particularly as pertains to small arms, is popularly called 'kick.'

recoil adapter. A device fastened between a gun, esp. an aircraft machine gun, and its mount to adapt the gun for mounting and to absorb the gun's recoil.

recoil booster. Component of machine gun which traps some of the gas from the barrel and acts to insure positive recoil action when the gun is fired at angles other than the usual horizontal.

recoil brake. That part of the recoil mechanism (which see) that actually absorbs the energy of recoil and stops the rearward movement of the recoiling parts.

recoil cylinder. See: **CYLINDER, RECOIL.**

recoiling mass. The mass of the recoiling parts of a weapon.

recoiling parts. Those parts of a weapon which move in recoil. This usually includes the tube, breech housing, breechblock assembly, and parts of the recoil mechanism.

recoilless. Of a gun: Built so as to eliminate or cancel out recoil.

Most recoilless guns are designed to let part of the propellant gases escape to the rear to eliminate recoil.

recoilless ammunition. Term used to identify ammunition intended for use in recoilless rifles. Provision is made in the ammunition for release of propellant gases in the manner and quantity necessary to produce the recoilless action.

recoilless rifle. Term applied to a weapon consisting of a light artillery tube of the recoilless type and a very light mount. For the 57-mm caliber the gun is fired from a shoulder mount, thus giving rise to the term 'recoilless rifle.' The larger calibers are fired from light weight, portable tripod mounts or from light vehicles such as the jeep. Ammunition for all calibers is termed recoilless ammunition. See: **recoilless; recoilless ammunition.**

recoil mechanism. Mechanism designed to absorb the energy of recoil in such a manner as to avoid violent movement of the gun carriage. In the broad sense it also includes the *counterrecoil mechanism* for returning the gun to the *in battery* position after recoil. The recoil mechanism usually incorporates a *recoil cylinder*, containing a recoil oil, and a recoil piston. The piston is forced through the oil filled cylinder forcing the oil through orifices and thus converting the recoil energy into increased temperature of the oil. The gun is returned to battery by the counterrecoil mechanism which stores energy for this purpose, usually in a pneumatic or spring mechanism. See also (in addition to italicized terms above): **single recoil system; double recoil system; independent recoil system; dependent recoil system; hydro pneumatic recoil system; hydrospring recoil system.** Several calibers of recoil mechanisms are listed hereunder, with item name in each case.

RECOIL MECHANISM, 8 INCH GUN.

RECOIL MECHANISM, 8 INCH HOWITZER.

RECOIL MECHANISM, 37 MILLIMETER GUN.

RECOIL MECHANISM, 75 MILLIMETER GUN.

RECOIL MECHANISM, 75 MILLIMETER

PACK HOWITZER.

RECOIL MECHANISM, 76 MILLIMETER GUN.

RECOIL MECHANISM, 90 MILLIMETER GUN.

- RECOIL MECHANISM, 105 MILLIMETER HOWITZER.**
- RECOIL MECHANISM, 155 MILLIMETER GUN.**
- RECOIL MECHANISM, 155 MILLIMETER HOWITZER.**
- RECOIL MECHANISM, 240 MILLIMETER HOWITZER.**
- RECOIL MECHANISM, 280 MILLIMETER GUN, PRIMARY.**
- RECOIL MECHANISM, 280 MILLIMETER GUN, SECONDARY.**
- recoil oil.** A neutral, constant-viscosity oil used in hydropneumatic and hydrospring recoil systems.
- recoil operated.** Of an automatic or semiautomatic firearm: That utilizes recoil to throw back or unlock the bolt or slide and actuate the loading mechanism. Applied especially to certain locked-breech firearms. Recoil operated weapons are classified as *long recoil* when the barrel and breechblock or bolt recoil the entire distance together, and as *short recoil* when the breechblock or bolt is unlocked and the barrel is stopped after only a short distance of recoil together.
- recoil pit.** Pit dug near the breech of a gun to provide space for the breech when it moves backward during recoil.
- recoil system.** See: **recoil mechanism.**
- recoil velocity.** Velocity in recoil of the recoiling parts of a gun.
- recondition.** Renovate, repair, overhaul, rebuild or take any combination of these actions in order to return an item to a state of serviceability.
- reconnaissance by fire.** Method of reconnaissance in which fire is placed on a suspected enemy to disclose his presence by movement or by returning the fire.
- reconnaissance satellite.** An earth satellite designed to obtain strategic information, as through photography, television, etc.
- record.** (rec) *Electronic computers.* A listing of information, usually in printed or printable form; one output of a compiler consisting of a list of the operations and their positions in the final specific routine and containing information describing the segmentation and storage allocation of the routine; to copy or set down information in reusable form for future reference; to make a transcription of data by a systematic alteration of the condition, property or configuration of a physical medium, e.g., placing information on magnetic tape or a drum by means of magnetized spots.
- RECORDER, AZIMUTH.** An item which makes a permanent representation of the angle measured in a horizontal plane between a target and a selected reference line. Does not include **RECORDER, AZIMUTH DEVIATION**.*
- RECORDER, AZIMUTH DEVIATION.** A device which makes a permanent representation of the relationship between the bearing of an observed point and the bearing of a directional radio beam. May include accessories.*
- RECORDER, AZIMUTH-ELEVATION-RANGE.** An item which makes a permanent representation of the angle between a fixed reference point and a target in a horizontal plane, the angle between a fixed point and a target in a vertical plane, and the distance between a reference point and a target. May include accessories.*
- RECORDER, RANGE.** An item which makes a permanent representation of distance expressed as range, versus time.*
- RECORDER, TELEMETRIC DATA.** A device which makes a permanent record of meter and/or instrument data received by a telemetric data receiver on a medium such as tape. It does not include audio or radio frequency amplifiers or switches.*
- recorder, time-distance.** A device used for simultaneously recording time elapsed and distance traveled.
- RECORDING SET, TELEMETRIC DATA.** A complete electronic set specifically designed to make a permanent record of meter and/or instrument data received by a telemetric data receiver on a medium such as tape. See also: **RECEIVING SET, TELEMETRIC DATA**.*
- recovered pressure.** See: **pressure, recovered.**
- recovery party.** A form of contact party whose purpose is the recovery of disabled ordnance materiel from predesignated collecting points, and the transportation of this materiel to the ordnance shops for repairs. A recovery party consists of two or more wrecking trucks and their crews under an officer or noncommissioned officer.
- recovery vehicle.** Special purpose vehicle equipped with winch, hoist, or boom for recovery of vehicles.
- RECOVERY VEHICLE, FULL TRACKED.** A self-propelled armored vehicle, having boom and power winch equipment, designed primarily to recover disabled tanks and other vehicles in combat areas. It may also be used for lifting engines, transmissions, and the like, during repair of disabled vehicles.*
- rectangle of dispersion.** See: **hundred-percent rectangle.**
- rectifier.** Device for changing alternating current to pulsating direct current; a device which will allow current to flow through it in one direction only.
- RECTIFIER, METALLIC.** An electrical item of which the working element is constructed essentially of metallic substances which changes alternating current to pulsating direct current by the rectifying action occurring at the junction interface between a metallic conductor and a semiconductor.*
- recuperator; recuperator mechanism.** See: **counterrecoil mechanism.**
- red.** Indicates, in the nomenclature of a **SIGNAL, SMOKE, GROUND**, several smoke pellets which produce freely falling streamers of red smoke at the height of the trajectory.
- red chg (abbr).** 'Reduced charge.'
- redout.** Reddening of the vision as a result of deceleration.

red, parachute. Indicates, in the nomenclature of a SIGNAL, SMOKE, GROUND, a single smoke pellet, parachute suspended, which produces red smoke.

Red River Arsenal. Ordnance Corps field installation, located at Texarkana, Texas.

red star, cluster. Indicates, in the nomenclature of a SIGNAL, ILLUMINATION, GROUND, a cluster of several freely falling red stars (lights).

red star, parachute. Indicates, in the nomenclature of a SIGNAL, ILLUMINATION, GROUND, a single red star (light), parachute supported.

Redstone. Name applied to an Army surface-to-surface ballistic missile of intermediate range. Uses liquid fuel and has a range of approximately 300 miles. Has nuclear and nonnuclear capabilities.

Redstone Arsenal. (RSA) Field installation of the Ordnance Corps located near Huntsville, Alabama. Location of U. S. Army Ordnance Missile Command, Army Ballistic Missile Agency, and Army Rocket and Guided Missile Agency.

red tracer. Indicates, in the nomenclature of a SIGNAL, ILLUMINATION, AIRCRAFT, a red tracer light which burns for $2\frac{1}{2}$ to 4 seconds, followed by two freely falling stars (lights) of indicated colors, which burn for 3 to $4\frac{1}{2}$ seconds.

reduce. To clear a stoppage in a weapon.

reduced charge. See: charge, reduced.

REDUCER, FLASH, PROPELLING CHARGE. An item designed for use with a propelling charge to reduce muzzle flash.*

reduction gear. A gear assembly between a powered shaft and another shaft, by which the latter shaft is driven at lower rpm than the powered shaft.

redundant bombing. A term used in reference to the bombing of a target or targets which have already been made inoperative or useless by attacks on other targets upon which the former are dependent for their operation.

reentry. *Specif.* The reentry of a missile into the earth's atmosphere, or into the denser portion of the atmosphere, as it descends from very high altitudes. This poses problems in ballistics, the study of which is termed *reentry ballistics*.

refer. *Gunnery.* To bring the gunsights on a chosen aiming point without moving an artillery piece which has been laid for direction.

reference dimension. In dimensioning, a dimension without tolerance used for informational purposes only. Does not govern machining operations in any way. Reference dimensions are indicated on drawings by writing the abbreviation 'REF' directly following or under the dimension.

reference piece. One gun or launcher of a battery selected as the standard with which to compare the firing of the others. Each of the others is called a 'test piece.'

reflected pressure. The pressure from an explosion, which is reflected back from a solid object or surface, rather than dissipated in the air. Said esp. of an airburst bomb.

reflected ray. *Optics.* A ray of light which has been reflected from the surface of an object such as a mirror. Cf: incident ray.

reflection. 1. *Physics.* The rebounding of light, heat, or sound from a surface through the same medium by which the reflected light, heat or sound came. **2. *Optics.*** Light striking a surface and returning or 'bouncing back' into the medium whence it came. *Regular reflection* from a plane polished surface, such as a mirror, will return the major portion of the light in a definite direction lying in the plane of the incident ray and the normal. See: angle of reflection. *Regular reflection* will form a sharp image. *Diffuse reflection* occurs when the surface is irregular and the reflected light diverges from each point as if it were a separate reflecting surface. Diffused rays go in many directions and will not form a distinct image.

reflection interval, radar. The length of time required for a radar pulse to travel from the source to the target and return to the source, taking the velocity of radio propagation to be equal to the velocity of light 2.998×10^8 m/sec or 299.8 m/micro-second. Since the pulse must travel, in all, twice the distance of the target (out and back), the apparent velocities are only one-half of the true velocity of the pulse. Likewise, the reflection intervals are just twice as great when target ranges are considered. The following table, as calculated, takes into consideration both travel to the target and return:

*Apparent velocity
(travel/unit time)*

<i>Radar Ranges</i>	<i>Reflection intervals</i>
149.9 m/microsec	0.006671 microsec/m
491.8 ft/microsec	0.002033 microsec/ft
163.9 yd/microsec	0.006101 microsec/yd
0.0932 statute mi/micro-sec	10.735 microsec/statute mile
0.0809 nautical mi/micro-sec	12.361 microsec/nautical mile

reflector. A mirror, usually concave, for reflecting light or sound in a particular direction.

REFLECTOR, AIMING POST. A retrodirective reflecting device which is attached to an aiming post, and used to reflect images of a light source to establish a reference line for indirect artillery fire. May be used with or without colored filters.*

reflector, parabolic. See: parabolic reflector.

reflector plate. *Gunnery and bombing.* A transparent mirror in a computing gunsight or in some types of optical gunsights and bombsights, that reflects the reticle image or images to the eye.

reflex sight. An optical or computing sight that reflects a reticle image or images onto a reflector plate for superimposition on the target by the eye.

refraction. 1. The bending of light which occurs when a ray of light passes obliquely from one medium to another of different density. **2.** In air navigation, the bending of light waves from a celestial body, caused by the atmosphere or by an astro-

- dome. Hence, *atmospheric refraction, dome refraction*. 3. *Radio*. The bending of a radio or radar wave, caused esp. by striking the ionosphere.
- refraction loss.** *Electroacoustics*. That part of the transmission loss due to refraction resulting from nonuniformity of the medium.
- refractive index of air.** The ratio of propagation velocity in a vacuum to the velocity in the atmosphere for electromagnetic radiation. At sea level the refractive index is approximately 1.0003, decreasing at the rate of approximately -1.2×10^{-8} per foot with gain in altitude.
- regenerative engine.** 1. A jet or rocket engine that utilizes the heat of combustion to preheat air or fuel entering the combustion chamber. 2. Specifically applied to a type of rocket engine in which one of the propellants is used to cool the engine by passing through a jacket prior to combustion.
- register.** 1. Adjust fire on a visible point, called a check point, and compute accurate adjusted data so that firing data for later targets may be computed with reference to that check point. 2. Adjust fire on several selected points in order that they may serve later as auxiliary targets. 3. *Electronic computers*. A device capable of retaining information which is usually subset of the aggregate information in a digital computer.
- registered document.** Any document that has an assigned number by which accounting of it is made to the office of record. It usually, but not necessarily, has a security classification.
- registration fire.** That fire delivered to obtain corrections for increasing the accuracy of subsequent artillery fires.
- regressive burning.** Term sometimes used for 'degressive burning.' See: *degressive granulation*.
- regulated item.** An item requiring special control in handling, distribution, and use because of its highly technical, costly, or hazardous nature, or because of some other specified concern.
- regulating station.** A command agency established to control all movements of personnel and supplies into or out of a given area.
- regulator.** A device designed to control or maintain designated characteristics at predetermined values, or vary them in accordance to a predetermined plan. (Excludes governors, which perform a similar function in controlling speed or revolutions per minute.)*
- regulator, oil-temperature.** A device, sometimes referred to as a cooler, used on internal combustion engines, to lower the oil temperature during summer and to assist in increasing the temperature during cold starts in winter.
- Regulus.** Name applied to a Navy surface-to-surface tactical missile, which resembles a swept wing jet fighter and may be launched from submarine, surface ship or shore base. Designed primarily for use against land targets. This winged missile or pilotless bomber is powered with a solid fuel rocket and turbojet engines. The guidance system is command radar and the range is 650-900 miles. Two missiles in this series are *Regulus I* and *Regulus II*.
- Reid vapor-pressure test for gasoline.** A test for gasoline which measures the vapor pressure exerted by that fuel in a closed system. Used to determine the presence of objectionable quantities of the light constituents in the gasoline which may prematurely become vapor in the fuel line or carburetor and thus prevent a free flow of fuel to the engine.
- relative azimuth angle.** *Specif.* An azimuth angle measured from the heading of a ship or aircraft.
- relative force.** *Interior ballistics*. Ratio of the force (which see) of a test propellant to the force of a standard propellant, measured at the same initial temperature and loading density in the same closed chamber.
- relative shrinkage.** See: *shrinkage*.
- relative velocity.** 1. The velocity of relative motion, esp. in respect to an aircraft and the airstream. 2. The velocity of one moving object as compared with that of another moving object.
- relative wind.** The velocity of the air with reference to a body in it. Usually determined from measurements made at such a distance from the body that the disturbing effect of the body upon the air is negligible.
- relay.** 1. *Electrical*. A protective or control device which completes or breaks into electrical circuit(s) in response to electrical changes in an external circuit. The contacts and actuating element are not in series. It is not designed to permit manual opening of the protected or controlled circuit but may have facilities for manual closing or reset upon automatic opening of the circuit. It is classified by the type of contact actuation, such as armature, meter movement, motor driven, rotary, and solenoid rather than by its application. Such uses as time delay, antenna switching, and keying are secondary features since, for example, a time-delay relay may be of the armature, motor driven, or solenoid, or thermal type. Motor-driven switches, photoelectric tubes and electron tubes which may function as switching devices are not considered as relays. For items with provisions for manual operation, see: **RELAY-SWITCH**.* 2. An explosive train component that provides the required explosive energy to reliably initiate the next element in the train. Specifically applied to small charges that are initiated by a delay element and, in turn, cause the functioning of a detonator. See: *explosive train*.
- RELAY-SWITCH.** An item having the dual functions of a switch and a relay which are fixed together or assembled together on a common panel or in an inclosure. Contacts may be common to both relay and switch. For relay operated switch, use **RELAY** with applicable modifier. Excludes **CIRCUIT BREAKER** and rotary relay with protruding shaft.*
- release.** 1. *Mechanical*. A mechanical arrangement of parts for the holding or freeing of a device or mechanism as required. 2. *Cartridge actuated devices*.

A stroking type CAD used for various specialty applications such as releasing latches or fasteners in an aircraft.

RELEASE, ANCHOR, UNDERWATER MINE. A hydrostatically operated release mounted on the mine anchor designed to separate the anchor from the mine case at a predetermined depth.*

RELEASE, CARGO PARACHUTE. A device which automatically releases a parachute from its cargo after it has reached the ground.*

RELEASE, CASE, UNDERWATER MINE. A hydrostatically operated release mounted on the mine case designed to separate the case from the mine anchor at a predetermined depth.*

RELEASE, DRAG PLATE, UNDERWATER MINE. A hydrostatically operated release designed to separate a mine drag plate from a mine at a predetermined depth.*

RELEASE, FIRING PIN. A gas operated release utilized to hold or free a firing pin in a canopy remover, thruster, initiator, and the like. Basically it is a small cylindrical piston and cylinder assembly incorporating a pressure inlet with an integral fitting for attaching a standard high pressure hose.*

RELEASE, FLOAT, UNDERWATER MINE. A hydrostatically operated release designed to separate a mine float from a mine case at a predetermined depth.*

RELEASE, MARKER BUOY, UNDERWATER MINE. An item designed to be actuated by a blasting cap for the release of a marker buoy from an underwater mine control box and/or junction box.*

RELEASE, PARACHUTE, UNDERWATER MINE. A release designed to separate an underwater mine parachute from an underwater mine upon impact with the water.*

RELEASE, PROPELLANT VALVE, GUIDED MISSILE. An item specifically designed to operate a propellant valve through explosive actuation and shut off the flow of the guided missile propellant.*

reliability. The probability of a device performing its purpose adequately for the period of time intended under the operating conditions encountered. For a system with independent components the *overall reliability* is based on the product of the individual reliabilities; e.g., three independent components with a 90% reliability each will have an overall reliability of $.9 \times .9 \times .9$ or 72.9%. Similarly, 100 components with a 99% reliability each will have an overall reliability of only 36.5%.

reline. To replace a worn liner of a gun to give it the ballistics of a new weapon.

rels (abbr). 'Release.'

REM (abbr). 'Roentgen equivalent man.'

remaining velocity. Speed of a projectile at any point along its path of fire. Usually measured in feet per second.

remnant lot. Not a full lot (which see).

remote control system. A system or method of control in which control is directly exercised from a distance

over a gun, tank or other piece of equipment, esp. by means of electrical or electronic apparatus.

remote gun control. Pointing a gun in azimuth and elevation by means of a remote control system, which automatically keeps the gun pointed according to the firing data.

removal liner; removable liner. Rifled inner cylinder of a gun tube, made so it can be taken out and replaced when it becomes worn. See: liner (sense 1).

remover. Cartridge actuated devices. A stroking type CAD similar to a catapult (sense 2), but usually of shorter stroke. Removers usually are employed to remove the canopy of an aircraft prior to personnel escape and do not have strict specifications for acceleration or rate of change of acceleration.

REMOVER, AIRCRAFT CANOPY. An item designed to jettison the canopy from an aircraft to provide an exit for personnel.*

REMOVER, FUZE AND BOOSTER. A hand operated device consisting of a quick release vise for holding a projectile being defuzed or deboosted, a gear box through which power is applied to a shaft by means of a wheel, and a shaft set up between the vise and the gear box. The shaft is of sufficient length to pass through a safety barricade. It is used when safety conditions demand barricade protection for removing the fuze or booster from a projectile.*

renegotiation. Proceeding under the Renegotiation Act to determine the existence of and secure the repayment to the Government of excessive profits, if any, for a fiscal year or other period, received or accrued under contracts and subcontracts subject to statutory renegotiation.

renegotiation agreement. Voluntary agreement resulting from renegotiation, which provides for the repayment of that portion of the profits found to be excessive, or for price reductions, or both.

renovation. 1. Process of restoring materiel to, or nearly to, its original condition by cleaning, painting or similar methods. 2. Restoration of ammunition to serviceable condition by operations more extensive or hazardous than routine ammunition maintenance (which see). Normally involves replacement of components.

reorder point. An arbitrary level of stock on hand plus due in, at or below which routine requisitions for replenishment purposes are submitted in accordance with established requisitioning schedules.

repair. To restore that which is unserviceable to a serviceable condition by adjusting or replacing damaged or unserviceable parts, components, or assemblies.

repair forecast. The quantity of items estimated to be repaired or rebuilt for issue during a stated future period.

REPAIR KIT, FIELD ARTILLERY MAINTENANCE. A repair kit designed for the maintenance of light, medium, and heavy artillery guns and howitzers.*

REPAIR KIT, MARKER, UNDERWATER MINE.

A group of replacement parts used for overhauling a MARKER KIT, UNDERWATER MINE.*

repair part. Any part, assembly, or component that is required for installation in the maintenance of an end item.

repair parts list. List approved by designated authorities, indicating the total quantities of repair parts, tools, and equipment necessary for the maintenance of a specified number of end items for a definite period of time.

replacement factor. The estimated percentage of equipment in use that will require replacement during a given period due to wearing out beyond repair, enemy action, abandonment, pilferage, and other causes except losses incident to the separation of personnel and in transit losses attributable to ship sinkings.

replenisher. A cylinder containing recoil oil and a spring actuated piston, which allows for expansion of oil in the recoil system which has become heated during firing of the weapon. It also returns oil to the recoil system after firing, when the temperature (and volume) of the oil is down.

report. Sharp explosive sound, as of a shot, bursting bomb, or projectile.

report of survey. An official report prepared on a standardized form, which records the circumstances concerning the loss, damage, or destruction of property, and which serves as, or supports, a voucher for dropping the property from property records.

The report of survey also serves in the determination of responsibility for the property concerned.

repose angle of yaw. See: yaw.

reSHIP. Document forwarded to consignee reporting that shipment of an item or items has actually been physically accomplished.

required supply rate. Amount of ammunition for each type weapon, expressed in rounds per weapon per day, required to sustain operations of any designated force without restriction.

requisition line item. Unit of work measurement in supply operations based on one line entry on a requisition, shipping order, or other related document.

rescue vehicle. See: recovery vehicle.

RESDAT (abbr). 'Restricted Data—Atomic Energy Act of 1954.'

research. (rsch) 1. A process by which something is sought out, esp. by systematic effort; a gathering and a close examination of data with a particular object of discovering something or of making something; a studious inquiry given direction by a purpose. 2. The product of such a process or effort.

The term 'research' (sense 1) is a broad term. It embraces, in one instance, the activity involved in collecting hitherto unknown or undetected data by means of any method of investigation, as by running a series of experiments, by uncovering relics or records, or by making observations through reading

written records; or it may embrace a second step in this activity, that of classifying collected data, analyzing and evaluating it, or developing principles or hypotheses out of it. This activity is called 'basic research,' because it deals with primary evidence and provides new knowledge and new understandings. See: basic research.

In another instance, research may apply to the mental and physical activity involved in making something concrete to exemplify some principle or put knowledge gained in basic research to some useful purpose, as in the research done to build a missile. This research is called 'applied research.' Often basic research and applied research go hand in hand, applied research being used to test the validity of the basic research process. See: applied research. See also: operations research.

research and development project. A specifically defined task, subtask, or group of related tasks within a research and development field, which is established (by technical committee action, which see) to meet a military need for research data, a technique or an administrative service, an item or items of materiel, a system, a major component or components, or modifications to adopted items.

reservoir. 1. A place where anything is kept in store; *specif.*, a part of an apparatus in which a liquid is held. 2. In brake systems, cylinder designed for storage of compressed air.

Resident Inspector of Ordnance. (RIO) A civilian inspector stationed at a contractor plant, who supervises or performs the inspection required on Government contracts, and executes documents by which formal acceptance for the Government is effected.

residual chamber pressure. See: pressures, gun.

residual penetration. As pertains to shaped charge ammunition: Penetration of the jet into a backing target of some standard material after passage through a thickness of target material under test. This penetration is a measure of the effectiveness of the tested material against the jet.

residual radiation. Nuclear radiation emitted by the radioactive material deposited after an atomic burst or an attack with radiological warfare agents. Following an atomic burst the radioactive residue is in the form of fission products, unfissioned nuclear material, and material, such as earth, water, and exposed equipment, in which radioactivity may have been induced by neutron bombardment.

RESIN COATING, THERMOSETTING. An item consisting of a thermosetting resin in a suitable solvent. It is used as an oil resistant permanent corrosion preventive on surfaces of metallic non-bearing engine parts, airframe components, magnesium parts, aircraft wheels, gun mounts, gear housings, and the like. Do not use if a more specific name exists.*

resistance. 1. *Physics.* Any opposing force; a force tending to prevent motion; as, the *resistance* of a target to projectiles. 2. *Elec.* The opposition to the flow of electric current.

- resistor.** *Electrical.* An item having electrical resistance whose primary purpose is to limit the flow of current in either direction in an electrical circuit.*
- RESISTOR, THERMAL.** A resistor specifically designed so that its ohmic value varies with ambient temperature changes.*
- RESOLVER, ELECTRICAL.** An item consisting of a stator and rotor, inductively coupled. The voltages on the rotor are sine and cosine functions of the voltage(s) on the stator and the angular position of the rotor with respect to the stator.*
- resojet.** A pulsejet. See: **ENGINE, PULSE-JET.**
- resolution.** In radar, the minimum separation in angle or in range between two targets which the equipment is capable of distinguishing.
- resolution in azimuth.** The angle by which two targets must be separated in azimuth in order to be distinguished by a radar set, when the targets are at the same range.
- resolution in range.** Distance by which two targets must be separated in range in order to be distinguished by a radar set when the targets are on the same azimuth line.
- resolver.** *Electronic computers.* Means for resolving a vector into two mutually perpendicular components.
- resolving power.** *Optics.* A measure of the ability of a lens or optical system to form separate images of two objects close together. No lens or optical system can form a perfect image of a point; it will appear as a small disk surrounded by concentric circles. If two points are so close together that the disks overlap, the points cannot be distinguished separately; they cannot be resolved. Increasing the lens diameter decreases the size of the disks. Thus, resolving power is the angle subtended by two points which are just far enough apart to permit resolution. This angle is termed the limiting angle of resolution.
- resonant jet.** A pulsejet engine, so-called because of the intensification of power under the rhythm of explosions and compression waves within the engine. See: **ENGINE, PULSE-JET.**
- resonator, magnetostrictive.** A ferromagnetic rod so designed and arranged that it can be excited magnetically into resonant vibration at one or more definite frequencies.
- respirator.** Device for regulating counterrecoil in some hydropneumatic recoil systems. By the controlled release of air pressure the device assists in buffer action during counterrecoil.
- responder.** That part of a transponder that automatically transmits a reply to the interrogator-responder. Also called 'responder beacon' when its function as a beacon is emphasized.
- responder beacon.** The radar beacon that serves to emit the signals of the responder in a transponder.
- responser.** That component of an interrogator-responder that receives and displays the reply from the responder beacon.
- rest (abbr).** 'Restrict; restricted.'
- restricted.** (rest) Formerly used to designate classified information, material, or matter other than that classified top secret, secret, or confidential, which required some degree of security protection. No longer in use.
'Restricted' designated the least sensitive type of security material. Cf: restricted data.
- restricted data.** As defined in the Atomic Energy Act of 1946. 'all data concerning the manufacture or utilization of atomic weapons, the production of fissionable material, or the use of fissionable material in the production of power,' but not including 'any data which the [Atomic Energy] Commission from time to time determines may be published without adversely affecting the common defense and security.' See also: defense information; RESDAT.
- restricting plug.** See: **choke ring.**
- RETAINER, ANTITANK MINE BOOSTER.** Component for a MINE, ANTITANK which serves to retain a booster charge in place, prior to insertion of the fuze.
- RETAINER, ARMING WIRE SEAL.** An item which mates with another item to compress a special rubber seal to form a seal around one or more arming wires and to seal arming wire openings when wires are removed.*
- retardation.** Loss of velocity of a projectile or other missile as it travels along its trajectory.
- reticle.** 1. A part or component in an optical or computing sight, made up of, or showing, a system or pattern of lines, dots, cross hairs, or the like for aiming purposes; the system of lines or other marks contained in an optical or computing sight. 2. A reticle image.
- reticle image.** A light image of the reticle in a computing gunsight or in certain types of optical gunsights and bombsights, cast on a reflector plate and superimposed on the target.
The reticle image is formed by light passing through a pierced reticle and projected on a reflector plate. It often consists of a ring-shaped light image surrounding the pipper image.
- reticule.** Variant of 'reticle.'
- retrace line.** The line traced by the electron beam in a cathode-ray tube in going from the end of one line or field to the start of the next line or field.
- retreat gun.** The firing of a gun as a signal for the lowering of the flag at retreat. The gun is fired after the sounding of the last note of the bugle call at retreat. Also called 'evening gun.' See also: reveille gun.
- retro-fired.** Rearward-fired. See: **rocket, retro.**
- retrofit.** [*Retroactive refit.*] A modification of equipment to incorporate changes made in later production of similar equipment. Retrofitting may be done in the factory or field.
- reveille gun.** The firing of a gun at the first note of reveille or at sunrise. Also called 'morning gun.' See also: retreat gun.
- reverse jato.** See: **rocket motor, reverse.**

reversible engine. 1. An engine that may be reversed.

2. *Thermodynamics.* A heat engine which, if forced to trace out its indicator diagram in a reversed direction (so that the work which would be done by the engine, when running direct, is actually spent upon it) will reject to the source of heat the same quantity of heat as, when running direct, it would take from the source, and will take from the receiver of heat the same quantity as, when running direct, it would reject to the receiver.

reversible steering gear. A steering gear for a vehicle, the road wheels of which are capable of being deflected by obstructions.

revetment. A retaining wall faced with concrete, stone, etc., commonly used for fortifications or to protect against explosions.

revolver. A firearm with a cylinder of several chambers so arranged as to revolve on an axis and be discharged in succession by the same lock. Excludes PISTOL (as modified) and PISTOL, PYRO-TECHNIC.* Official designation of a revolver is given hereunder with item name.

REVOLVER, CALIBER .38.

revolving gantry crane. See: CRANE, GANTRY REVOLVING.*

Reynolds number. [Named after Osborne Reynolds (1842-1912), a physicist and engineer of Northern Ireland and Manchester, England.] A correction factor applied to analysis of the fluid flow about scale models in wind-tunnel tests to determine the results to be expected of the flow about full-scale models.

The Reynolds number corrects for the scale effect resulting from the difference in size between the scale model and its full-scale prototype. It is expressed in a fraction, the numerator consisting of the density of the fluid, multiplied by its velocity and by a linear dimension of the body immersed in the fluid, the denominator consisting of the coefficient of viscosity. See: dynamic similarity.

RF (abbr). 'Radio frequency.'

RFNA (abbr). 'Red fuming nitric acid.'

rg (abbr). 'Range.'

rhomboidal prism. *Optics.* A prism with four parallel sides and two slanting or oblique, parallel ends. It will divert the path of light entering its ends without changing the form of the light. Rhomboidal prisms may be rotated on the centers of their ends to divert the lines of sight to permit interpupillary adjustment of the eyepiece of a binocular instrument such as a stereoscopic height finder.

RIA (abbr). 'Rock Island Arsenal.'

RIO (abbr). 'Resident Inspector of Ordnance.'

rib. A chordwise structural member in an airfoil, which gives the airfoil its form and transmits the load from the airfoil covering to the spars; *specif.*, a wing rib.

ribbon parachute. A type of parachute consisting of numbers of ribbons held in place by equally-spaced tapes, with spacing between the ribbons to give the required porosity.

rib rifling. Rifling of the bore of a gun in which the lands and grooves are of equal width.

rich mixture. A fuel-air mixture containing a high percentage of fuel and a low percentage of air, as compared with a normal mixture or lean mixture; rich fuel mixture.

ricochet. 1. Of a projectile, bomb, or the like: To skip, bounce, or fly off at an angle after striking an object or surface. 2. An act or instance of ricocheting.

ricochet bombing. See: skip bombing.

ricochet burst. Burst of a projectile in the air after it has hit and bounced. A ricochet burst is used effectively against enemy personnel.

ricochet fire. Fire in which the projectiles ricochet; sometimes used in artillery to obtain air bursts after initial impact.

Ridgewood Ordnance Plant. Ordnance Corps field installation, located at Cincinnati, Ohio.

rifle. 1. A firearm having spiral grooves upon the surface of its bore to impart rotary motion to the projectile and to insure greater accuracy of fire and longer range. It is a lightweight weapon usually fired from the shoulder and can be automatic or semiautomatic hand operated.* 2. To cut spiral grooves (rifling) in the bore of a gun in order to give a spin to the projectile so that it will have greater accuracy of fire and longer range.

Several calibers and types of rifles are listed in the subentries hereunder, with item name in each case.

RIFLE, CALIBER .22.

RIFLE, CALIBER .30.

RIFLE, CALIBER .30-06.

RIFLE, CALIBER .30, AUTOMATIC.

RIFLE, CALIBER .30, SUBCALIBER.

RIFLE, CALIBER .50, SPOTTING.

RIFLE, 7.62 MILLIMETER.

RIFLE, 7.62 MILLIMETER, AUTOMATIC.

RIFLE, 106 MILLIMETER.

rifle bracket. Metal clamp for holding the rifle in easy accessibility, usually on a motor vehicle.

rifle bullet impact sensitivity. See: sensitivity, rifle bullet impact.

rifled. Of a gun tube or barrel: Containing rifling (which see).

rifle grenade. See: GRENADE, RIFLE.

rifle-grenade cartridge. See: cartridge, grenade, rifle.

rifle-grenade launcher. See: LAUNCHER, GRENADE.

rifle range. Place for practice in shooting with a rifle.

rifle scabbard. See: scabbard.

RIFLE-SHOTGUN, SURVIVAL. A single shot weapon of the over and under type with the top barrel chambered for the caliber .22 hornet cartridge and the lower barrel chambered for the .410 gage shotgun shell. It is equipped with a folding sheet metal stock having facilities for storing ammunition.*

rifling. The helical *grooves* cut in the bore of a rifled gun tube, beginning at the front face of the gun chamber (*origin of rifling*) and extending to the muzzle; also the operation of forming the grooves in the gun tube. The purpose of rifling is to impart spin and stability to the projectile, so that the projectile will travel nose first to the target.

Engagement of the projectile with the rifling is generally accomplished by use of a *rotating band* on projectiles greater than about .60 inch in diameter, and on smaller projectiles, by providing a soft bullet or, if a hard cored projectile is necessary, by the use of a relatively soft jacket.

The gun bore diameter is determined by the ridges between the rifling grooves. These ridges are referred to collectively as the *lands*, and the sides of the lands are called *edges*.

When the projectile or bullet starts to move under the force exerted by the propellant gases the rotating band or jacket is *engraved* by the rifling which forms a reverse replica in the band or jacket. This *engraving* is accomplished partly by cutting and partly by forming.

In *recoilless ammunition* the force required to accomplish engraving of the band would interfere with accomplishment of the recoilless feature, and the projectiles for this ammunition are *preengraved*; that is, the grooves corresponding to the rifling are made in the rotating band at the time of manufacture. Provision is made to insure that the projectile will be inserted in the *recoilless rifle* in proper relationship to the rifling.

The *twist of rifling* at any point is the inclination of a groove to the element of the bore. It is expressed as the number of *calibers* of length in which the helix makes one complete turn, for example, 1 turn in 40 calibers. The direction of rifling is usually right hand, causing the projectile to rotate in a clockwise direction, as viewed from the base. This is known as *right hand twist*. If rotated in the opposite direction, it would be called *left hand twist*.

The present practice in the Ordnance Corps is to provide rifling of *uniform twist*; that is, rifling in which the angle of the helix to an element of the bore is constant.

Opinion relative to the desirability of *uniform twist of rifling* as opposed to *increasing twist of rifling* has apparently become settled in favor of the *uniform twist*. Considerations of production were important factors in this decision. Under the *increasing twist* system, the twist may start either at zero or at some low value, and then increase according to some function of the travel, either to the muzzle, or to some point short of the muzzle at which point the twist would become uniform to the muzzle. Increasing twist is also known as *gain-twist* or *gaining twist*.

rifling head. A cutting tool for rifling large gun tubes.

rigging. The shroud lines attached to a parachute.

right-angle prism. A type of prism used to turn a beam of light through a right angle (90°). It will invert (turn upside-down) or will revert (turn right

for left), according to the position of the prism, any light reflected by it.

right hand twist. See: rifling; twist, right hand.

right trail. Right hand part of a split type gun trail.

rigidity of the trajectory. The assumption that the trajectory may be tilted up or down through small angles of site without materially affecting its shape.

rim. The outer part of an object of circular shape as the base of a cartridge case; the outer part of a wheel, joined to the hub by the spokes; *specif.*, a removable outer band on an automobile wheel, to which the tire is attached.

rimfire. 1. Of a cartridge: Having the primer mixture in the rim of the cartridge case base. 2. Of a fire-arm: Using rimfire cartridges. Cf: center-fire.

rimless. Said of a cartridge case in which the extracting groove is machined into the body of the case, i.e., no part of the case extends beyond the body.

rimmed. Said of a cartridge case in which an extractor rim projects beyond the body of the case.

ring and bead sight. Type of gunsight in which the front sight is a bead or post and the rear sight a ring.

RING, DRAG, TORPEDO. A cylindrical item designed to fit over a torpedo warhead or exercise head. It is used to increase the efficiency of a torpedo stabilizer and reduce the impact of an aircraft torpedo when entering the water.*

RING, DUMMY PROJECTILE. A replaceable part of a dummy projectile. RING, DUMMY PROJECTILE, sliding type, is the carrier for the BAND, DUMMY PROJECTILE, and serves to facilitate release of the dummy projectile from the weapon. The retaining ring retains the BAND, DUMMY PROJECTILE: rear, in place and permits its replacement when necessary.

ring gear. A gear cut on a ring-shaped rim; *specif.*, in an automobile, the large gear in the differential that is driven by the propeller shaft pinion and transmits the power through the differential to the live axle.

ring head. *Electroacoustics.* A magnetic head in which the magnetic material forms an enclosure with one or more air gaps. The magnetic recording medium bridges one of these gaps and is in contact with or in close proximity to the pole pieces on one side only.

ringing. *Electroacoustics.* An oscillatory transient occurring in the output of a system as a result of a sudden change in input.

ring-oil. To oil (a bearing) by conveying the oil to the point to be lubricated by means of a ring, which rests upon and turns with the journal, and dips into a reservoir containing the lubricant.

ring oiler. A ring-oiling device. See: ring-oil.

ring, powder. 1. Cloth bag in the shape of a ring that holds a section of the propelling charge in some types of ammunition. The number of rings used controls the strength of the charge and the range of the pro-

- jectile. 2. Metal ring in which powder train of black powder time fuzes is loaded.
- ring sight.** A sight, esp. a gunsight, in the shape of a ring or concentric rings, through which aim is taken and range is estimated.
- Ring sights include the iron type (a simple ring or set of rings inclosing a cross hair or the like) and the optical type, in which a system of lenses is used to show a series of concentric rings and the bead.
- riot grenade.** See: **grenade, riot.**
- riot gun.** Any shotgun with a short barrel, especially a short-barreled shotgun used in guard duty or to scatter rioters. A riot gun usually has a 20-inch cylinder barrel. See also: **SHOTGUN, 12 GAGE, RIOT TYPE.**
- rip cord.** 1. A parachute rip cord. 2. A cord or rope attached to a rip panel for ripping the panel open. See: **rip panel.**
- rip panel.** A panel in a free or dirigible balloon, which when torn loose or opened causes immediate deflation.
- risers.** Main lift webbing of the parachute harness to which the parachute canopy is attached.
- rise time.** In electronics, the time required for a pulse to rise to an arbitrary fraction (usually 90 percent) of its amplitude.
- Riverbank Ordnance Plant.** Ordnance Corps field installation, located at Riverbank, California.
- rkt (abbr).** 'Rocket.'
- RL (abbr).** 'Rocket launcher.'
- RMP (abbr).** 'Rated maximum pressure.'
- RMS (abbr).** 'Root mean square.'
- RMS (effective) pulse amplitude.** The square root of the average or the square of the instantaneous amplitude taken over the pulse duration.
- rn (abbr).** 'Range.'
- rnd (abbr).** 'Round.'
- road oil.** Oil for putting on roads to lay the dust and act as a binder. Heavy oils from asphalt-base petroleum are the most used.
- road test.** Test of an item, such as a vehicle, under practical operating conditions on the road.
- robot bomb.** See: **bomb, robot.**
- Rochester Ordnance District.** Former Ordnance district, absorbed into the **New York Ordnance District** (which see).
- rocker.** Movable, built-in support in a field gun carriage, between the trail and the cradle, that allows changes in elevation to be made without disturbing the angle of position setting.
- rocket.** (rkt) 1. An unmanned self-propelled vehicle, with or without a warhead, designed to travel above the surface of the earth and whose trajectory or course, while in flight, cannot be controlled. Excludes Guided Missile and other vehicles whose trajectory or course, while in flight, can be controlled remotely, or by homing systems, or by inertial and/or programmed guidance from within.* 2. To fire at with rockets. 3. To go or send by rocket.
- rocket, aircraft.** (AR) A rocket especially designed to be carried by, and launched from, an airplane. See: **rocket.**
- rocket ammunition.** Any type of ammunition incorporating rockets, esp. relatively small-size rockets as fired by aircraft.
- rocket, antitank.** Rocket designed for use against tanks or other armored vehicles. See: **rocket.**
- ROCKET ASSEMBLY KIT.** A collection of tools, fixtures and hardware items required to accomplish assembly of the components of a rocket, preparatory to launching, packed in a manner suitable for issue.
- rocket assist.** An assist in thrust given an airplane or missile by use of a **ROCKET MOTOR(S)** or **ROCKET ENGINE(S)** during flight or during takeoff. See also: **jet assisted takeoff.**
- rocket assisted takeoff.** (RATO) A term referring to **rocket assist** (which see) at takeoff.
- rocket assisted torpedo.** (RAT) See: **torpedo, rocket assisted.**
- rocket bomb.** See: **bomb, rocket.**
- rocket, boosted.** A rocket contained in a cylindrical shaped case, one end of which is fitted with a primer and propelling charge for imparting initial velocity to the rocket. Official designations of boosted rockets are listed hereunder with **item name** in each case.
- ROCKET, BOOSTED, 105 MILLIMETER.**
- ROCKET, BOOSTED, 107 MILLIMETER.**
- rocket booster.** See: **booster** (sense 2).
- rocket, booster.** A **ROCKET MOTOR** that increases the speed, range, or altitude of the airplane, rocket, missile or other vehicle to which it is attached. See also: **jato unit.**
- rocket, chemical agent.** A rocket with warhead containing a chemical agent. Official **item name** of such a rocket is listed hereunder. The size designation indicates the diameter of the warhead.
- ROCKET, CHEMICAL AGENT, 115 MILLIMETER.**
- rocket conditioning kit.** See: **CONDITIONING KIT, ROCKET.***
- ROCKET ENGINE.** A nonairbreathing reaction propulsion device that consists essentially of an injector, thrust chamber(s) and exhaust nozzle(s), and utilizes *liquid* fuels and oxidizers at controlled rates from which hot gases are generated by combustion and expanded through a nozzle(s).* Cf: **ROCKET MOTOR.**
- rocket, flash-smoke.** A rocket with warhead containing material to produce flash and smoke on functioning. Official **item name** of such a rocket is listed hereunder. The size designation indicates the diameter of the warhead.
- ROCKET, FLASH-SMOKE, 762 MILLIMETER.**
- rocket fuel.** A fuel, either in liquid or solid form, developed for, or used by, a rocket. Sometimes includes the oxidizing substance.

rocket, gas. A rocket with warhead containing a war gas. Official item name of such a rocket is listed hereunder. The size designation indicates the diameter of the warhead.

ROCKET, GAS, 4.5 INCH.

rocket gun. Term sometimes (loosely) applied to a tube-type rocket launcher. See: **LAUNCHER, ROCKET.**

rocket head. Former name for the ogive-shaped front part of a round of rocket ammunition which carries the explosive or other payload. See: **warhead.**

rocket, high explosive. A rocket with warhead containing a high explosive charge. Official designations of such rockets are listed hereunder with item name in each case. The size designation indicates the diameter of the warhead.

ROCKET, HIGH EXPLOSIVE, 2.75 INCH.

ROCKET, HIGH EXPLOSIVE, 3.5 INCH.

ROCKET, HIGH EXPLOSIVE, 4.5 INCH.

ROCKET, HIGH EXPLOSIVE, 5 INCH.

ROCKET, HIGH EXPLOSIVE, 12.75 INCH.

ROCKET, HIGH EXPLOSIVE, 66 MILLIMETER.

ROCKET, HIGH EXPLOSIVE, 76 MILLIMETER.

ROCKET, HIGH EXPLOSIVE, 80 MILLIMETER.

ROCKET, HIGH EXPLOSIVE, 318 MILLIMETER.

ROCKET, HIGH EXPLOSIVE, 762 MILLIMETER.

rocket igniter. An igniter for igniting the propellant in a rocket. See: **IGNITER, ROCKET MOTOR.**

rocket, illuminating. A rocket to be fired into the air for the purpose of producing illumination.

rocket, incendiary. A rocket with warhead designed to produce an incendiary effect at the target. Official item name of such a rocket is listed hereunder. The size designation indicates the diameter of the warhead.

ROCKET, INCENDIARY, 8 INCH.

rocket, inert. A rocket with warhead in which all explosives, pyrotechnics, and chemical agents are omitted or replaced with inert materials. Official designations of such items are listed hereunder with item name in each case. The size designation indicates the diameter of the warhead.

ROCKET, INERT, 2.25 INCH.

ROCKET, INERT, 2.75 INCH.

ROCKET, INERT, 4.5 INCH.

ROCKET, INERT, 12.75 INCH.

rocket launcher. See: **LAUNCHER, ROCKET.**

rocket, liquid. Term used to indicate a rocket using liquid propellant. See: **ROCKET ENGINE.**

rocket missile. A missile using rocket propulsion. See: **missile; rocket propulsion.**

ROCKET MOTOR. A nonairbreathing reaction propulsion device that consists essentially of a thrust chamber(s) and exhaust nozzle(s), and that carries its own *solid* oxidizer-fuel combination from which

hot gases are generated by combustion and expanded through a nozzle(s). It may be empty or contain a simulated and/or inert load.* Cf: **ROCKET ENGINE.**

rocket motor, guided missile. See: **ROCKET ENGINE; ROCKET MOTOR.***

rocket motor, reverse. A ROCKET MOTOR mounted or turned backward so that the force can be used for decelerating an airplane or other moving object.

rocket ogive. See: **OGIVE, ROCKET.**

rocket pod. A pod containing rocket ammunition usually mounted on a wingtip or under a wing.

rocket, practice. A rocket used in practice or training, having either an uncharged warhead, or a warhead containing a spotting charge, but having the same engine or motor as the corresponding service rocket. Official designations of such rockets are listed hereunder with item name in each case. The size designation indicates the diameter of the warhead.

ROCKET, PRACTICE, 2.25 INCH.

ROCKET, PRACTICE, 2.75 INCH.

ROCKET, PRACTICE, 3.5 INCH.

ROCKET, PRACTICE, 4.5 INCH.

ROCKET, PRACTICE, 12.75 INCH.

ROCKET, PRACTICE, 80 MILLIMETER.

ROCKET, PRACTICE, 318 MILLIMETER.

ROCKET, PRACTICE, 762 MILLIMETER.

rocket projector. See: **LAUNCHER, ROCKET.**

rocket-propelled. Propelled by one or more rocket engines or rocket motors.

rocket propulsion. Propulsion by means of a rocket or rockets. A species of reaction propulsion. See: **reaction propulsion; rocket.**

rocket rail. A launching rail for rockets. See: **launching rail.**

rocket, ram. 1. A rocket motor mounted coaxially in the open front end of a ramjet, used to provide thrust at low speeds and to ignite the ramjet fuel. 2. The entire unit or power plant consisting of the ramjet and such a rocket.

rocket, retro. A rocket intended for firing to the rear from an airplane at a velocity which will result in a vertical drop against a target such as a submarine.

rocketry. 1. The science or study of rockets, embracing theory, research, development, and experimentation. 2. The art and science of using rockets, especially rocket ammunition.

rocket, smoke. A rocket with warhead which contains material to produce a smoke cloud on functioning. Official item name of such a rocket is listed hereunder. The size designation indicates the diameter of the warhead.

ROCKET, SMOKE, 3.5 INCH.

rocket, sounding. A high altitude rocket for carrying equipment for recording and/or transmitting information on ambient conditions at high altitudes.

rocket, subcaliber. A rocket designed especially to be fired from launching tubes of larger caliber than the rocket itself.

- rocket, subcaliber aircraft.** (SCAR) A subcaliber rocket designed to be launched from aircraft. See: **rocket, subcaliber.**
- rocket thrust.** The thrust of a rocket engine or rocket motor. See: **jet thrust.**
- ROCKET, TRAINING.** A practice missile designed to be used with rocket launchers for training in launching techniques.
- rocket tube.** 1. A launching tube for rockets. See: **launching tube.** 2. A tube or nozzle through which rocket gases are ejected.
- Rockford Ordnance Plant.** Ordnance Corps field installation, located at Rockford, Illinois.
- Rock Island Arsenal.** (RIA) Ordnance Corps installation, forming a part of the Ordnance Weapons Command, located at Rock Island, Illinois. Principal development, engineering and Ordnance manufacturing installation in the field of carriages and recoil mechanisms for light and medium field artillery. It also has similar responsibility for surface-to-surface rocket launchers, and special mission assignments in connection with corrosion problems and research on nonmetallic materials.
- roentgen.** A measure of ionization produced by X-ray or gamma radiation. The unit of measurement of radiation in terms of its effect on human beings. This is technically defined as the amount of X or gamma radiation which as a result of ionization will produce, in 1 cubic centimeter of dry air at standard conditions of temperature and pressure, ions carrying 1 electrostatic unit of electricity of either sign.
- roentgen equivalent man.** (REM) The quantity of any type of ionizing radiation which when absorbed by man produces an effective equivalent to the absorption by man of one roentgen of X or gamma radiation.
- roll.** An angular displacement about an axis parallel to the longitudinal axis of an airframe or a missile.
- roll acceleration.** See: **acceleration, roll.**
- rolled armor.** See: **armor.**
- Rolligon.** Name given to vehicle equipped with low-pressure pneumatic bags which take the place of wheels or tracks. Primarily designed to travel over sand, muskeg, swamps, marshes, and ice- or snow-covered terrain.
- rolling barrage.** An artillery barrage that precedes infantry troops at a predetermined rate in their advance during the attack to protect them and facilitate their advance. A creeping or jumping barrage. See: **barrage.**
- rolling recoil.** System formerly used for absorbing the recoil energy of some railway guns. With the brakes set, the entire car is allowed to roll back when the gun is fired.
- roll out.** *Electronic computers.* To read out of a storage device by simultaneously increasing by one the value of the digit in each column and repeating this 'r' times (where r is the radix) and, at the instant the representation changes from (r-1) to zero: (a) generating a particular signal, or (b) terminating a sequence of signals, or (c) originating a sequence of signals.
- Rome Air Development Center.** (RADC) Air Force center responsible for technical developments concerning ground electronics systems. Located at Griffiss Air Force Base, Rome, New York.
- roof-angle prism; roof prism.** See: **Amici prism.**
- root mean square.** (RMS) 1. *Math.* The square root of the arithmetical mean of the squares of a set of numbers. 2. *Electrical and electronic.* The RMS of a sinusoidal wave is the maximum (crest) value divided by the square root of 2. In measuring the effective volts or amperes of an alternating current, the RMS values equal the same values in a continuous current.
- root-sum-square.** The square root of the sum of the squares. In electroacoustics, commonly used to express the total harmonic distortion.
- rope.** Electromagnetic wave reflectors consisting of long strips of metal foil. Similar to window or chaff, but longer. Dropped from airplanes or shot into the air in projectiles. A small parachute or other device may be attached to each strip to reduce rate of fall. See also: **CHAFF, COUNTERMEASURES; window.**
- Rossford Ordnance Depot.** Ordnance Corps field installation, located at Toledo, Ohio.
- rotating band.** See: **band, rotating.**
- rotating crank.** *Specif.* Crank used to turn the breech mechanism of a large gun.
- rotating prism.** See: **Dove prism.**
- rotating wedge.** A circular optical wedge mounted to be rotated in the path of light to divert the line of sight to a limited degree. See: **correction wedge; measuring wedge.**
- rotation coefficients.** Factors employed in computing the effects on range and deflection which are caused by the rotation of the earth. They are published only in firing tables involving comparatively long ranges.
- rotor.** 1. A turning or rotating object or part; the part which revolves around a stationary part. 2. A vehicular gun-mount member provided with trunnions. 3. *Elec.* The rotating part of an electrical rotating machine which does not include a commutator. It may include the winding and/or collector rings.
- rotor torque, locked.** *Elec.* The locked rotor torque of a motor is the minimum torque which it will develop at rest for all angular positions of the rotor, with rated voltage applied at rated frequency. Also called 'static torque.'
- rough burning.** Pressure fluctuations frequently observed at the onset of burning and at the combustion limits of a ramjet or rocket.
- round.** (rnd) Short for **complete round** (which see).
- round of ammunition.** See: **complete round.**
- round-off.** *Electronic computers.* To change a more precise quantity to a less precise one, according to some rule.

rout (*abbr.*). 'Routine.'

routine. (*rout*) *Electronic computers.* A set of coded instructions arranged in proper sequence to direct the computer to perform a desired operation or series of operations.

routine ammunition maintenance. Maintenance operations not involving disassembly of ammunition or replacement of components, and comprising chiefly cleaning and protecting exterior surfaces of individual items, packages of ammunition, ammunition components and explosives. Cf: **renovation** (sense 2).

routine, general. *Electronic computers.* A routine expressed in computer coding designed to solve a class of problems, specializing to a specific problem when appropriate parametric values are supplied.

roving artillery. Artillery withdrawn from its regular position and assigned to special missions. Roving artillery is usually moved about and fired from different positions to deceive the enemy as to position and strength.

roving gun. Gun that is moved about and fired from different positions to mislead or harass the enemy. Generally used for registration when the location of the battery position must remain secret.

row stack. To stack supplies in rows from wall or imaginary wall line to aisle.

rpm (*abbr.*). 1. 'Revolutions per minute.' 2. 'Rounds per minute.'

RSA (*abbr.*). 'Redstone Arsenal.'

rsch (*abbr.*). 'Research.'

rubber. *Vehicles.* Includes track bushings, track shoes, band tracks, bogie tires, combat tires, and shock-absorbing mounts for equipment ranging from engines to instruments.

rudder. A movable control surface, usually attached to a vertical stabilizer, by which an air vehicle is guided in the horizontal plane.

On a rocket missile or the like, a rudder may be placed to work either in the airstream or in the jet stream. See: **jet vane.**

rudder angle. The acute angle between the chord of a rudder moved from a neutral position and an aircraft's plane of symmetry.

This angle is positive when the trailing edge of the rudder is to the left of neutral.

run. 1. Steady, level flight of an aircraft across a

target to enable bombs to be dropped accurately in horizontal bombing. 2. Passing of a moving target once across the range.

runaway gun. Automatic weapon that continues firing after the trigger is released. A runaway is caused by a defect in some part of its mechanism.

run in. To operate (a newly built machine) long enough and at the proper speeds to cause the bearing surfaces to so wear that the machine may be satisfactorily operated under service conditions.

running gear. All parts of a vehicle pertaining to road operation, including wheels, axles (front and rear), suspension (springs), brake system, tires, steering mechanism, frame, lunette, drawbar attachment, and lights.

Frame, usually of pressed steel, forms a foundation for the body, the power plant, transmission, steering devices, fuel tank, and some accessories. Cf: **chassis**; **hull.**

Springs break the jars and bumps and protect the machinery, load, and occupants from undue shock and vibration. Cf. **suspension.**

Wheels are front and rear, the motor vehicle being driven by either; if by the rear wheels, the front wheels run free on the axle and support the front end of the vehicle and give it direction.

Rear axle revolves and communicates the driving effort of the power plant to the rear wheels.

Front axle, attached to the frame through the front spring members, forms a means of attachment for the front wheels so as to permit moving the wheels themselves by means of the steering device.

Some vehicles drive on all four wheels, some on four wheels on two rear axles, some on two front and four rear wheels, and some on only the front wheels.

rupture. 1. Complete or partial circular break in the metal of a fired cartridge case. A rupture causes loss of power and difficult extraction or jamming. Cf: **split.** 2. Breaking of earth or other substance by the explosion of a projectile or other charge below the surface.

rust inhibitor. Compound, usually added to lubricants, which prevents or deters corrosion of metals.

rust preventive. Preventive compound which may be applied to metallic surfaces to protect them from rusting or corroding. See: **CORROSION PREVENTIVE COMPOUND.**

S

S (*abbr.*). In jato unit nomenclature, indicates a solid propellant.

SA (*abbr.*). 1. 'Secretary of the Army.' 2. 'Small arms.' 3. 'Springfield Armory.' 4. 'Arsenic trihydride' (arsine, war gas).

SAA (*abbr.*). 'Small arms ammunition.'

sabot. Lightweight carrier in which a subcaliber projectile is centered to permit firing the projectile in the larger caliber weapon. The sabot diameter fills the bore of the weapon from which the projectile is fired. One type of sabot is discarded a short distance from the muzzle and is known as a 'discarding sabot.' A sabot is used with a hypervelocity armor-piercing projectile having a tungsten carbide core; in this case, the core may be considered as the subcaliber projectile. See also: hypervelocity armor-piercing; hypervelocity armor-piercing discarding sabot.

sabotage. Action by enemy agents or sympathizers with intent to stop or otherwise hinder a nation's war effort or to interfere with or obstruct the defense of a nation.

sabotage bomb. See: bomb, sabotage.

SAC (*abbr.*). 'Strategic Air Command.'

Sach's theory. An alternate theory to Kirkwood-Brinkley's theory, embodying scaling laws by which the effect of blast at high altitudes may be inferred from the results at ground level.

SAE horsepower formula. Standard (Society of Automotive Engineers) formula for computing horsepower of gasoline engines, as follows:

$$hp = \frac{D^2 \times N}{2.5}$$

based on 1,000 feet per minute piston speed. D is the cylinder bore in inches, N the number of cylinders, and 2.5 a constant.

SAE standard engine test codes. Detailed codes contained in the SAE handbook, published by the Society of Automotive Engineers, Inc., with accompanying standard log sheets and data forms, which describe the routine practices generally followed in determining the operating characteristics of engines and which form a guide for engine testing.

SAE standard threads. Society of Automotive Engineers Standard system of screw threads. The thread form and pitch series are the same as for the American Standard system, except the extra fine (EF) and special pitch (SP) series, which are special for the SAE system.

SAE viscosity. A number used by the Society of Automotive Engineers to designate the viscosity of a lubricant, as in 30 SAE or 50 SAE.

An SAE viscosity number is approximately one-

half the Saybolt number for an oil having the same viscosity. See: Saybolt viscosity.

SAF (*abbr.*). 'Secretary of the Air Force.'

safe. Of ammunition: So constituted and set as not to detonate accidentally; in a safe condition.

safe contents destroyer. See: CRYPTOGRAPHIC EQUIPMENT DESTROYER, INCENDIARY; FILE DESTROYER, INCENDIARY.

safety. A locking or cut-off device that prevents a weapon or missile from being fired accidentally.

SAFETY AND ARMING DEVICE, GUIDED MISSILE. A mechanism which prevents or allows the warhead train of explosives to operate.*

safety angle. See: angle of safety.

safety belt. Strong belt that is used in aircraft, tanks, or other vehicles to prevent the wearer from being thrown from his seat during swift maneuvering or mishap.

safety block. A block which, in the safe position, prevents functioning of the fuze, by limiting the motion of the PIN, FIRING.

SAFETY CAN. A cylindrical metal container intended for temporary storage or handling of flammable liquids such as gasoline, naphtha, benzine inside of buildings that are not provided with special storage rooms of proper construction, and for transport of such liquids for filling and supply purposes within local outside areas (excludes bench type safety cans).*

safety device. See: safety.

safety factor. 1. Increase in range or elevation that must be set on a gun so that friendly troops, over whose heads fire is to be delivered, will not be endangered. 2. Overload factor in design to insure safe operation. 3. See: factor of safety.

safety fork. Metal clip that fits over the collar of the fuze in a land mine and prevents the mine from being set off accidentally. Its function is the same as that of a safety pin. Cf: safety pin; safety wire.

safety fuse. See: FUSE, BLASTING, TIME.

safety glass, laminated. See: GLASS, LAMINATED, FLAT.*

safety groove. A groove incorporated in an item or component of ammunition, so that any failure will occur at a selected location and will be of a less hazardous nature than might otherwise result from a failure.

safety lever. 1. A metal piece forming part of a grenade fuze that is restrained by the thrower's hand or by the projection adapter after the safety pin is removed. Upon throwing or projection, the lever is discarded and the fuze train is initiated by the

action of the released fuze firing pin. 2. Lever that sets the safety mechanism on certain types of automatic weapons. Cf: **safety pin**.

safety lock. Locking device that prevents a weapon from being fired accidentally.

safety, margin of. See: **margin of safety**.

safety pin. A device designed to fit the mechanism of a fuze and to remain with it throughout transportation. Presence of the safety device prevents arming or functioning of the fuze, and the device is intended to be removed by the user just prior to employment. Cf: **safety fork**; **safety wire**.

safety shoes. Special shoes without spark-producing nails or plates, worn by men working around explosives. Different types of shoes are worn, depending on conditions. Some have nonconductive soles and some have conductive soles for the purpose of discharging static electricity. All are designed to avoid sparking. Not to be confused with safety toe shoes which are designed to protect the toes from injury.

safety wire. Wire set into the body of a fuze to lock all movable parts into safe positions so that the fuze will not be set off accidentally. It is pulled out just before firing. In some cases it is called 'safety pin.' Cf: **safety fork**; **safety pin**.

SAGE. Abbreviation and usual terminology for **Semi-automatic Ground Environment**, which see.

sally port. Large gate or passage in a fortified place.

saluting gun. Cannon used for firing salutes.

salvo. 1. A simultaneous, or nearly simultaneous, discharge of shots from two or more closely placed guns or launchers against the same target. 2. a. The release of several bombs or rocket missiles simultaneously, or in close train, from one or more aircraft at a single target. b. The manner of such release, as in 'he released his bombs, in salvo.' 3. The aggregate of shots, bombs, or rockets so discharged or released.

salvo bombing. Method of bombing in which the release mechanisms are operated to drop all bombs carried simultaneously.

salvo fire. That method of fire in which weapons are discharged one after the other, usually at intervals of two seconds. Not to be confused with Navy usage, wherein salvo is the equivalent of an artillery volley.

SAM (abbr). 'Surface-to-air missile.'

sampling risk. In inspection procedure, the probability, under the sampling plan used, that acceptable material will be rejected or that unsatisfactory material will be accepted. See: **acceptable quality level and operating characteristic curve**.

S&W (abbr). 'Smith and Wesson.'

San Francisco Ordnance District. (SFOD) One of the eleven districts into which the United States is divided for purposes of industrial mobilization, procurement, contract negotiation and administration, etc., by the Ordnance Corps. Embraces the counties of Monterey, Kings, Tulare, and Inyo, and all counties north thereof in the State of California; the State of Nevada except the counties of Clark, Lincoln,

Esmeralda, and Nye; and the States of Oregon, Washington, Idaho, Montana, and Wyoming. The main office is located in San Francisco, California.

San Jacinto Ordnance Depot. Ordnance Corps field installation, located at Channelview, Texas.

SAP bomb (abbr). 'Semi-armor-piercing bomb.'

sarin. (GB) See: **CHEMICAL AGENT, ISOPROPYL METHYLPHOSPHONOFUORIDATE**.

satellite. Anything that attends another of the same kind, as in astronomy, a body that revolves about another body, or in space aviation, a man-made body caused to revolve about the earth or the sun.

saturation. *Specif.* The striking of a target area with such numbers of missiles that no place in it remains untouched by destruction.

saturation bombing. Intense area bombing intended to leave no place in a given area free from destructive effects.

Saturation bombing may be achieved by dropping many small bombs, or by dropping a medium number of large bombs, or by dropping a single massive bomb.

Savanna Ordnance Depot. Ordnance Corps field installation, located at Savanna, Illinois.

Saybolt number. A number that designates viscosity of a lubricant, as in *60 Saybolt* or *100 Saybolt*. See: **SAE viscosity**; **Saybolt viscosity**.

Saybolt viscosity. Viscosity as determined by the number of seconds required for an oil heated to 130°F for lighter oils, and 210°F for heavier oils to flow through a standard orifice and fill a 60 cc flask. See: **Saybolt number**. See also: **COMPARATOR, VISCOSITY, OIL**; **VISCOSIMETER, WEIGHT BALANCE**.

SB (abbr). 'Supply Bulletin.'

S-band. A radio-frequency band of 1,550 to 5,200 megacycles with wavelengths of 19.35 to 5.77 centimeters, respectively. *Obsolescent*. See: **frequency, electronic**.

sbtg (abbr). 'Sabotage.'

SC (abbr). 1. 'Shaped charge.' 2. 'Subcaliber.'

scabbard. A sheath with an open top, designed to protect edged weapons, rifles, carbines, and sub-machine guns from the elements and rough usage. Usually made of leather or canvas. Used primarily by mounted troops.* Several examples of official designations of scabbards are listed hereunder with item name in each case.

SCABBARD, BAYONET.
SCABBARD, BAYONET KNIFE.
SCABBARD, CARBINE.
SCABBARD, RIFLE.
SCABBARD, SUBMACHINE GUN.
SCABBARD, SWORD.
SCABBARD, TRENCH KNIFE.

scabbing. Breaking off of fragments in the inside of a wall of hard material due to the impact or explosion of a projectile on the outside. See: **spall** and **spalling**, preferred terms.

scalar quantity. Any quantity that can be described by magnitude alone, such as temperature. Cf: **vector quantity.**

scale. A device designed to weigh, count or compute (or a combination thereof) through an element which indicates the state of equilibrium between two opposing forces.*

scale effect. An effect in fluid flow that results from changing the scale, but not the shape, of a body around which the flow passes.

This effect is relevant to wind-tunnel experiments. Correction for this effect is by use of a **Reynolds number** (which see).

scaling law. A formula which permits the calculation of some property for a given article based on data obtained from a similar, but different size, article; e.g., crater size, nuclear radiation, etc., for a nuclear warhead of any yield from the known values for another yield.

scaling wind. Same as **ballistic wind**, which see.

scan. 1. The process of bringing something under systematic search or observation with the intention of detecting some significant object, as in radar or in watching out for hostile aircraft either from the ground or air; *specif.*, radar scan. 2. The motion or the pattern associated with this process, esp. in radar. 3. The extent of this motion or pattern. See: **sector scan.** 4. To survey the sky or any particular airspace by looking successively from one point of direction to another. 5. *Radar.* To traverse or sweep an airspace or region with a succession of directed beams emanating from a radar antenna. 6. *Television.* To pass over a subject, view, or image with successive motions of an electronic beam so as to pick up and transmit the image, view, or the like by television.

The scans in radar are described by the patterns they make, as in **circular scan**, **conical scan**, **helical scan**, **linear scan**, and **spiral scan**. See separate entries.

scan, axis of. In a scanning system, the axis about which information as to the target location is collected and with reference to which target displacement is measured.

scanner. In radar, the mechanism used in scanning (see: **scan**) and in tracking targets during gunfire.

The scanner is the mechanical and electrical structure that rotates or swivels so that it points in successively different directions. Incorporated in it is the radiator.

scanning. *Radar.* The motion, usually periodic, given to the major lobe of an antenna; the process of directing the radio-frequency beam successively over all points in a given region of space.

scanning, electrical. A type of scanning which is accomplished electrically and without motion of the antenna.

SCAR (*abbr.*). 'Subcaliber aircraft rocket.'

scavenger system. 1. A device for clearing smoke and gases from the chamber and bore after firing. Also known as 'gas ejector system.' 2. The evacuation

system in a wind tunnel for disposing of the products of combustion liberated from a burning model in the tunnel.

scavenging. 1. The sweeping out of engine cylinder, by piston movement or a blast of air, of all or most of the gaseous products of the preceding fuel combustion. 2. The sweeping out by a blast of air, of the gaseous products resulting from the firing of a gun. Provided for in some fixed or turret installations.

SCEL (*abbr.*). 'Signal Corps Engineering Laboratories.'

schematic diagram. A presentation of the element-by-element relationship of all parts of a system.

schematic drawing. A line drawing showing the interconnection of the various circuits within a component, using conventional symbols to represent the detail parts.

schliesswolle 18. Aluminized hexanite, a high explosive, prepared by the Germans during WW II. Also designated as *TSMV 1-101*. Contains 60 percent TNT, 24 percent hexite, and 16 percent powdered aluminum. Has large blast effect and was used in loading torpedo warheads.

schlieren. 1. Gradients or variations in gas density, or striae, from the German word. 2. An optical system which either cuts off or passes a large change in light intensity, owing to the slight refraction of the light passing through gas. This system is often used in wind tunnels, making visible turbulence and weak shock waves by directly showing the first derivatives of gas density.

Schneider ordnance. Ordnance originally manufactured at the Schneider works in France, and used at times in French, Russian, American, Japanese, and other armies.

Schneider recoil system. A recoil system, of Schneider design, employing the hydropneumatic principle without a floating piston.

scientific intelligence. That component of strategic intelligence which deals with the progress of research and development as it affects the economic or military potential of nations.

scientific research. 1. Research in the field of science. 2. Research employing scientific methods or techniques.

SCOOTER, MOTOR. A drop frame vehicle having two wheels, one behind the other, or, consisting of one front and two rear wheels or one rear and two front wheels; steered with a handle bar or wheel and propelled by a gasoline engine driving through sprockets and chain(s) or pulleys and belts to the rear wheels.*

scope. 1. A cathode-ray screen. 2. A cathode-ray tube. 3. Short for 'oscilloscope.' 4. Short for 'telescope' or 'telescopic sight.'

scout car. Lightly armed and armored reconnaissance vehicle, either wheel or half-track, without turrets, adapted for high-speed operation on hard roads and for cross-country missions. Cf: **CAR**, **ARMORED**.

SCRAMBLER, AUDIO SIGNAL. An item which renders intelligible speech or keyed audio frequency signals unintelligible without proper reconversion equipment and/or reverses this process.*

Scranton Ordnance Plant. Ordnance Corps field installation, located at Scranton, Pennsylvania.

screen. 1. *General.* To eliminate undesirable elements from anything. 2. *Specif.* To eliminate undesirable fixed echoes or clutter from a radar set, normally accomplished by sighting the radar in shallow defilade. 3. *Physics.* A part of an instrument or piece of apparatus designed to prevent agencies in one part from affecting other parts; as, optical, electric, and magnetic *screens*.

screening elevation. The elevation angle from a radar antenna to the crest that screens the radar.

screening smoke. A smoke cloud produced by chemical agents or smoke generators. Used to conceal friendly troops and/or to deny observation by enemy troops. See also: **smoke blanket**; **smoke screen**.

SD (abbr). 'Self-destroying; self-destruction.'

S/D (abbr). 'Secretary of Defense.'

sdng (abbr). 'Sound ranging.'

seacoast artillery. Class of artillery formerly used for seacoast defense. Consisted of fixed guns, howitzers, and mortars defending the harbors and manned by the former Coast Artillery Corps. As a class of artillery the term is now obsolete.

sea level. 1. The level at the surface of the sea; *specif.*, mean sea level adopted as a standard for measuring height or altitudes. 2. The standard datum plane from which altitudes are computed by means of differences in atmospheric pressures.

sea mine. See: **MINE, UNDERWATER.**

SEAR. 1. An item so designed as to retain the firing mechanism of a gun in the cocked position.* 2. A variety of lockwork in the firing mechanism of a cartridge actuated device which prevents motion of the firing pin until released.

search. 1. In radar scanning, the action of looking for an object of interest. 2. To distribute gunfire over an area in depth by successive changes in gun elevation.

searching control. Mechanism that changes the azimuth and elevation settings on a searchlight automatically and constantly, so that its beam is swept back and forth within certain limits.

searching sector. Area assigned to be covered by a searchlight or radar for the purpose of detecting enemy land, sea, or air targets; **search sector**.

searchlighting. Projecting the radar beam continuously at an object instead of scanning.

sea return. Indication on a radar indicator caused by radio waves being reflected back by the surface of the sea. See: **radar clutter**.

season cracking. An occurrence in brass cartridge cases and other brass parts in which cracking occurs because of residual internal strains from the manufacturing operations. Prevented by a short time an-

neal, which removes the residual strains without affecting the hardness.

seat. 1. Support or holder for a mechanism, or for a part of one. 2. To fit correctly in or on a holder, or prepared position; as, to seat a fuze in a bomb, a projectile in the bore of a gun, or a cartridge in a chamber.

SEAT, AIRCRAFT EJECTION. A seat designed to be ejected through an aircraft canopy or hatch opening, by means of some form of an explosive.*

seating. *Specif.* Distance to which a projectile is rammed into the bore of a cannon, usually measured from the base of the projectile to the rear face of the breech.

sec (abbr). 'Second(s).'

SecNav (abbr). 'Secretary of the Navy.'

secondary armament. See: **secondary weapon**.

secondary blast injuries. Those injuries sustained from the indirect effects, such as falling rubble from a collapsed building or missiles (debris or objects) which have been picked up by the winds generated and hurled against an individual. Also includes injuries resulting from individuals being hurled against stationary objects. Cf: **primary blast injuries**.

secondary bomb damage. Nonphysical bomb damage. See: **bomb damage (sense 2)**.

secondary high explosive. A high explosive which is relatively insensitive to heat and shock and is usually initiated by a primary high explosive. It requires a relatively long distance and time to build up from a deflagration to detonation and will not propagate in extremely small diameter columns. Secondary high explosives are used for boosters and bursting charges. Sometimes called 'noninitiating high explosives.' (*Note:* The use of the terms 'secondary high explosive' and 'noninitiating high explosive' is not accepted by all authorities.) Cf: **primary high explosive**.

secondary item. Any item, including end items, components, and spare parts, which has not been classified as a principal item (which see).

secondary station. 1. Observation post at the end of a base line farthest from the gun or directing point. 2. Any station in a radio net other than the net control station.

secondary target. Target against which fire is directed when the main fire mission has been accomplished, or when it has become impossible or impracticable for the gun or battery to carry out the main fire mission.

secondary weapon. Supporting or auxiliary weapon of a unit, vehicle, position, or aircraft. It is generally a gun of smaller caliber than the primary weapon and its purpose is to protect or supplement the fire of the primary weapon.

second-channel interference. Interference (which see), in which the extraneous power originates from a signal of assigned (authorized) type in a channel two channels removed from the desired channel.

secret. 1. (Often cap, or all cap letters.) Of classified material: Having such security status that its unauthorized disclosure would endanger national security, cause serious injury to the interests or prestige of the US, or be of great advantage to a foreign nation with respect to the US. See: **classification and defense information.** 2. Concealed, not openly shown or revealed, as in 'a secret agent' or 'a secret air base.'

secret weapon. A weapon closely guarded or kept under concealment so as to be used with advantage before countermeasures can be taken against it.

sector. A clearly defined area or air space designated for a particular purpose.

Examples would include: a. A distinct part of a front held by a given force. b. A defined area in a coastal frontier defense; the organization responsible for its defense. c. A defined air space in which a given force is responsible for its air defense. d. A defined part of the enemy's back or rear area, used in assigning air attack missions. e. A segment of air space extending cone-like from a radar scanner.

sector gear. 1. A toothed device resembling a portion of a gear wheel containing the center bearing and a part of the rim with its teeth. 2. A gear having such a device as its chief essential feature.

sector scan. A radar scan through a limited angle, either in azimuth or depth, as distinguished from a scan that fully rotates. Hence, *sector scanning.*

security classification. See: **defense information.**

security clearance. A clearance given a person permitting him access to classified material, equipment, or information up to and including a given classification, provided he can establish a need-to-know. For classifications see: **defense information.** See also: **Q clearance.**

security cognizance. The responsibility for the implementation of the Department of Defense Industrial Security Program for an individual facility which the Assistant Secretary of Defense (Manpower and Personnel) has assigned to one military department for that purpose.

security control officer. An officer, warrant officer, or responsible civilian official appointed in each command or agency to exercise staff supervision over the safeguarding of defense information.

security courier service. A courier service authorized and able to handle and transport classified information and material.

sedan, automobile. See: **AUTOMOBILE, SEDAN.***

seek. To go toward a target or other object in reaction to some influence such as heat, light, or sound emitted by the target or object. See: **seeker; target seeking.**

seeker. Any moving object that seeks its direction through a device attracted to light, heat, radio waves, sound, or the like, esp. a missile that finds its target by means of the light, heat, or the like emitted by the target; the device used in such an object.

See: **heat seeker; homing; homing device; target seeker.**

seen fire. Fire which is continuously aimed at the future position of an aircraft, the aim being derived from visual observation. Cf: **unseen fire.**

segment. *Electronic computers.* To divide a routine in parts each consisting of an integral number of subroutines, each part capable of being completely stored in the internal storage and containing the necessary instructions to jump to other segments; in a routine too long to fit into internal storage, a part short enough to be stored entirely in the internal storage and containing the coding necessary to call in and jump automatically to other segments. Routines which exceed internal storage capacity may be automatically divided into segments by a compiler.

selected mine. See: **mine, selected.**

selective delay fuze. See: **fuze, selective delay.**

selectivity. *Receivers.* That character which determines the extent to which the receiver is capable of differentiating between the desired signal and disturbances of other frequencies.

selector. *Electronic computers.* A device which interrogates a condition and initiates a particular operation according to the interrogation report.

SELECTOR, LAUNCHER CONTROL. An item specifically designed to monitor and control a guided missile launching area. Includes communication circuits and readiness to fire information from two or more individual missile launching panels. Excludes **PANEL, FIRING, GUIDED MISSILE.***

self-chambering. Ability of a weapon to chamber cartridges without manual aid.

self-contained base-line system. System of target location whereby the target is located in azimuth and range using a **self-contained range finder.**

self-contained range finder. Instrument used for measuring range by direct observation, without using a base line. The two types are the coincidence range finder and the stereoscopic range finder.

self-destroying. (SD) Indicates, in connection with a fuze or a tracer, that the missile (projectile, rocket, or missile) with which it is used will be destroyed (functioned) in flight prior to ground impact in case the target is missed. See also: **self-destruction.**

self-destroying fuze. See: **fuze, self-destroying.** See also: **self-destruction.**

SELF-DESTRUCT CHARGE, GUIDED MISSILE. An explosive element which operates in conjunction with that part of the missile which, of itself or by command, senses a catastrophic flight malfunction and destroys the missile.*

self-destruction. (SD) A term descriptive of an event which occurs from fuze or tracer action without outside stimulus, when provided for in the design, by which the fuze (or tracer) effects projectile or missile destruction, after flight to a range greater than that of the target. Self-destruction (also called 'self-destroying') items are employed in several types of antiaircraft ammunition where impact of

unexploded projectiles or missiles would occur in friendly areas. See also: *fuze, self-destroying; shell destroying tracer.*

self-destruction equipment. Equipment that may be destroyed by a self-contained explosive.

Detonation of the explosive may be by a time-delay mechanism, by radio command, by automatic trip mechanism, or by other device. Secret equipment exposed to the danger of capture may be rigged with a self-destruction device.

self-energizing. Term applied to a mechanical unit which has the ability to utilize itself to increase effectiveness; for example, the rotation of a brake drum to increase braking effectiveness.

self-hooping. Term sometimes used to describe the effect on a gun tube of manufacture by **radial expansion**, which see. The effect is similar to that produced by a hoop which is shrunk over the tube in 'built up' guns.

self-instructed carry. *Electronic computers.* A system of executing the carry process in which information is allowed to propagate to succeeding places as soon as it is generated and without receipt of a specific signal. See also: *carry and separately instructed carry.*

self-loader. A self-loading firearm or gun.

self-loading. Of a firearm or gun: That utilizes either the explosive gases or recoil to extract the empty case and chamber the next round.

Self-loading firearms or guns include both semi-automatic and full-automatic types.

self-piloting. See: *piloting, self.*

self-propelled. 1. Of a gun: Mounted on a vehicle that has its own motive power. 2. Of a missile: That is propelled by fuel carried by the missile itself, as in the case of a rocket. 3. Of a military unit: Having self-propelled guns. 4. Of a vehicle: Given motion by means of a self-contained motor.

self-propelled artillery. Artillery weapons permanently installed on vehicles which provide motive power for the piece. These weapons are fired from the vehicle.

self-propelled mount. (SPM) See: *mount, self-propelled.*

self-sealing. Of a fuel tank: Lined with a substance that closes immediately over any small rupture in the tank, such as a bullet hole.

Selsyn. [A General Electric name, coined from *self-synchronous.*] A term applied either to a synchro generator or a synchro motor, designed for different purposes, as for synchronizing gunfire with a radar scanner. See: *synchro.*

semiapical angle. See: *apical angle.*

semi-armor-piercing bomb. (SAP bomb) See: **BOMB, SEMI-ARMOR-PIERCING.**

semiautomatic. Of a firearm or gun: Utilizing part of the force of an exploding cartridge to extract the empty case and chamber the next round, but requiring a separate pull on the trigger to fire each round. Hence, *semiautomatic rifle; semiautomatic*

pistol; semiautomatic weapon; semiautomatic fire; etc. See: *automatic.*

Semiautomatic Ground Environment. (SAGE) A defense system providing instantaneous information needed for control of missiles and aircraft used to wage air battles. Best known by its abbreviation, pronounced as a word.

semiautomatic supply. System by which certain specified items of supplies needed by units, activities, or forces are shipped by the agencies responsible for supply on the basis of periodic reports of the status of stocks on hand and en route to the using agency. All other supplies are furnished on the basis of requisitions initiated by the using agency. See: *automatic supply.*

semiconductor device. An electron device in which the characteristic distinguishing electronic conduction takes place within a semiconductor which is an electronic conductor with resistivity in the range between metals and insulators and in which the electrical charge carrier concentration increases with increasing temperature over part of its temperature range. The semiconductor utilizes two types of carriers namely negative electrons and positive holes.*

SEMICONDUCTOR DEVICE, DIODE. A two-electrode semiconductor device containing germanium or silicon, and having an asymmetrical voltage-current characteristic. Excludes **SEMICONDUCTOR DEVICE, PHOTO.** For items containing material such as selenium and copper oxide, see: **RECTIFIER, METALLIC.***

SEMICONDUCTOR DEVICE SET. A grouping of two or more individual semiconductor devices such as transistors, diodes and photo semiconductor devices. Includes matched pairs.*

semidiesel engine. An internal combustion engine of a type resembling the diesel engine in using heavy oil as fuel but employing a lower compression pressure and spraying it under pressure, against a hot (uncooled) surface or spot, or igniting it by the precombustion or supercompression of a portion of the charge in a separate member or uncooled portion of the combustion chamber.

semifixed ammunition. Ammunition in which the cartridge case is not permanently fixed to the projectile, so that the **zone charge** (which see) within the cartridge case can be adjusted to obtain the desired range; loaded into the weapon as a unit. Cf: *fixed ammunition; separate loading ammunition; separated ammunition.*

semimobile artillery. Artillery weapons designed for movement but which require partial disassembly to place in firing position. Wheels or other suspension devices are removed from the mount to permit its resting on the ground. *Examples:* 90-mm and 120-mm antiaircraft weapons, 8-inch gun, 240-mm howitzers.

SEMITRACTOR, WHEELED. A two-wheeled, self-propelled vehicle primarily designed for high speed towing of heavy duty equipment, such as scrapers, dump trailers, cranes, and the like.*

- semitrailer.** A nonpowered vehicle, having integral wheels at the rear only, designed to carry materials, supplies or equipment and to be towed by a self-propelled motor vehicle and partially supported, when in motion, by the towing vehicle or by a dolly and couples with a FIFTH WHEEL ASSEMBLY. It may include a DOLLY, TRAILER CONVERTER. Excludes trailer.*
- SEMITRAILER, LOW BED.** A semitrailer with a front gooseneck (with or without a deck) designed to provide low loading height for transporting heavy and/or bulky objects. Excludes SEMITRAILER, TANK TRANSPORTER.*
- SEMITRAILER, TANK TRANSPORTER.** A semitrailer primarily designed to transport tracked combat vehicles. Excludes SEMITRAILER, LOW BED and commercial automobile transport semitrailers.*
- Simple plunger.** A centrifugal plunger, named for the inventor. This plunger operates to maintain a fuze in a safe condition until centrifugal force unlocks and moves the PIN, FIRING into the armed position.
- Seneca Ordnance Depot.** Ordnance Corps field installation, located at Romulus, New York.
- sense.** 1. *Electronic computers.* To examine, particularly relative to a criterion; to determine the present arrangement of some element of hardware, especially a manually-set switch; to read holes punched in paper. 2. *Gunnery.* To determine the sensing (which see).
- sensing.** The direction of a point of burst or impact, or centers of burst or impact with respect to the target; such as over, short, air or graze.
- sensitive.** Of a position, organization, or post: In which classified materials are handled.
- sensitive item.** Items of property having a ready sale in illicit markets and especially likely to be pilfered.
- sensitive position.** Any position within the Army establishment the occupant of which could bring about by virtue of the nature of the position a material adverse effect on the national security. Such positions include any of the duties or responsibility which require access to TOP SECRET, SECRET, or CONFIDENTIAL information or material, or any other position so designated by the Secretary of the Army or his designee.
- sensitivity.** The characteristic of an explosive component which expresses its susceptibility to initiation by externally applied energy.
- sensitivity, rifle bullet impact.** A measure of sensitivity of an explosive, determined by firing a caliber .30 bullet (standard ball ammunition) under standard conditions through a charge of test explosive loaded in a short pipe nipple closed at both ends by pipe caps. The results of a series of tests are compared with those for an accepted explosive.
- separated ammunition.** Separated ammunition is characterized by the arrangement of the propelling charge and the projectile for loading into the gun. The propelling charge, contained in a primed cartridge case that is sealed with a closing plug, and the projectile, are loaded into the gun in one operation. Separated ammunition is used when the ammunition is too large to handle as fixed ammunition. Cf: fixed ammunition; semifixed ammunition; separate loading ammunition.
- separate loading ammunition.** Ammunition in which the projectile, propellant charge (bag loaded), and primer are handled and loaded separately into the gun. No cartridge case is utilized in this type of ammunition. Cf: fixed ammunition; semifixed ammunition; separated ammunition.
- separately instructed carry.** *Electronic computers.* A system of executing the carry process in which carry information is allowed to propagate to succeeding places only on receipt of a specific signal. See also: self-instructed carry, and carry.
- separation.** 1. The phenomenon in which the boundary layer of the flow over a body placed in a moving stream of fluid separates from the surface of the body. 2. In multistage missiles, the time or place at which a burnt-out stage is discarded and the remaining missile continues on its way.
- separation point.** *Aerodynamics.* The point at which the separation of the boundary layer begins. See: separation (sense 1).
- sequential operation.** *Cartridge actuated devices.* Functioning involving the programmed triggering of more than one CAD according to a predetermined schedule.
- sergeant.** Army surface-to-surface ballistic missile, using solid propellant. Heavier but of somewhat shorter range than the Corporal. Has nuclear and nonnuclear capabilities.
- serial arithmetic unit.** *Electronic computers.* One in which the digits of a number are operated on sequentially. See also: parallel arithmetic unit.
- serial transmission.** *Electronic computers.* A system of information transmission in which the characters of a work are transmitted in sequence over a single line, as contrasted to parallel transmission.
- series elements.** *Network topology.* 1. Two-terminal elements are connected in series when they form a path between two nodes of a network such that only elements of this path, and no other elements, terminate at intermediate nodes along the path. 2. Two-terminal elements are connected in series when any mesh including one must include the others.
- service ammunition.** Ammunition intended for combat, rather than for training purposes.
- service board.** Organization established by the chief of each technical service to service-test items of material, e.g., Ordnance Board (which see).
- service bomb.** See: bomb, service.
- SERVICE KIT, GAS BOMB.** A collection of spare parts, accessories and tools contained in a wooden chest. It is intended to provide equipment for making repairs, testing for gas pressure within the bomb body and the detection of and sealing against gas leakage.*

service marking. Symbols, numerals or letters that are painted, stenciled or stamped on supplies or ammunition to give information needed for proper handling, storage and use.

service of the piece. Operation and maintenance of a gun or other equipment by its crew.

service practice. Part of the training program for troop units, consisting primarily of practical problems in the preparation, execution and conduct of fire with service or target practice ammunition.

service project. A research and development activity initiated because of an indicated need for developing methods, techniques and apparatus for research, development, or testing; for development leading to desirable modifications of adopted materiel, or for development of improved components of end items; and for other purposes which are of interest only to the developing agency in which they originate. Does not normally require technical committee action (which see).

service test. See: **user test.**

service test type. See: **type classification.**

service velocity. The muzzle velocity established as the velocity to be attained by a projectile of standard weight, under standard conditions of temperature, when fired from a new gun of the designated type. The range tables are computed on the basis of this velocity.

SERVICING PLATFORM, GUIDED MISSILE, TRUCK MOUNTED. An item specifically designed to provide an adjustable safe working platform for servicing a guided missile in the vertical position. It is designed to maintain a level altitude while in operation, and may be rotated in azimuth and elevated to any position along the missile's height.*

servo. Short for 'servomotor,' 'servomechanism,' or the like.

servoamplifier. An amplifier in a servosystem.

servocontrol. 1. Control of anything through use of a servomechanism. 2. The servomechanism that provides this control; *specif.*, on an airplane, an auxiliary control surface that by mechanical or aerodynamic relay takes over part of the load in operating a larger control surface.

servodyne. A power unit used in a servosystem.

servo gain. State of responsiveness of a servosystem to a voltage change.

servolink. A power amplifier, usually mechanical, by which signals at a low power level are made to operate control surfaces requiring relatively large power inputs, e.g., a relay and motor-driven actuator.

servomechanism. A mechanism in which control of position, speed, power output, etc., is effected by a device or devices that automatically change or correct, or help to change or correct, such position, speed, power, etc. in accordance with a predetermined setting or manipulation.

A servomechanism may, in one instance, be a simple relay in which, for example, a control lever is connected with a flying tab, which is the device

that helps move the control surface into a desired position. Or it may be a mechanism in which an auxiliary motor provides the power for keeping something in correct position, reacting to anything that serves to trigger the mechanism, such as a photoelectric cell, a meter, a particular voltage, etc. The mechanism that aims a gun on a ship, reacting to roll, pitch, and yaw is a kind of servomechanism.

servomotor. A motor that supplies power for moving a servomechanism or a component of a servomechanism.

servosystem. The system in which a servomechanism works.

For example, a source of power output that is controlled by a servomechanism may have some of its power output used to cause a reactor, such as a thermostat, to react so as to trigger motion in a servomotor, which in turn drives the servomechanism. The whole constitutes a servosystem.

setback. 1. The relative rearward movement of component parts in a projectile, missile or fuze undergoing forward acceleration during its launching. These movements, and the setback force which causes them, are used to promote events which participate in the arming and eventual functioning of the fuze. 2. Short for 'setback force.' See also: **setback force;** **set forward.**

setback force. The rearward force of inertia which is created by the forward acceleration of a projectile or missile during its launching phase. The forces are directly proportional to the acceleration and mass of the parts being accelerated. See also: **setback.**

set forward. 1. Relative forward movement of component parts which occurs in a projectile, missile or bomb in flight when impact occurs. The effect is due to inertia and is opposite in direction to 'setback.' 2. Short for 'set forward force.' See also: **setback;** **set forward force.**

set forward force. The forward force of inertia which is created by the deceleration of a projectile, missile or bomb when impact occurs. The forces are directly proportional to the deceleration and mass of the parts being decelerated. Also called 'impact force.' See also: **set forward.**

set forward point. A point on the expected course of the target at which it is predicted the target will arrive at the end of the time of flight.

set forward ruler. A device for determining the set forward point of a target.

setting ring. Part of a mechanical fuze setter that takes hold of a fixed ring on the fuze of a projectile. It then rotates the entire projectile except a small ring, or setting element, in the fuze. This setting element is kept from turning by the adjusting ring in the fuze setter just long enough to make the desired change in the setting of the fuze.

settling rounds. Rounds fired at varying angles of elevation to seat the spade and base plate of a gun mount firmly in the ground.

seventy-five degree centigrade international heat test. See: **heat tests.**

seventy-five degree line. Imaginary line between the final bomb release line and the vulnerable area upon which antiaircraft artillery guns are located. From such positions the guns at an elevation of 75 degrees can still engage and deliver effective fire on the final bomb release line.

SFOD (*abbr.*). 'San Francisco Ordnance District.'

SHACKLE. An open or closed link of various shapes with extended legs. Each leg has a transverse hole to accommodate a pin, bolt, or the like, which may or may not be furnished.*

shackle bolt. A bolt passing through a shackle and some other part, fastening the two together.

SHACKLE, BOMB, AIRCRAFT. A suspension device installed in, but not permanently fixed to, an aircraft. It is designed for attaching, arming and releasing of a bomb. It may also be utilized to accommodate other items such as mines, rockets, torpedoes, fuel tanks, rescue equipment, sonobuoys, flares and the like.*

shackle, spring. A SHACKLE (which see) for supporting the end of a spring, permitting the spring to vary in length as it deflects.

shaft horsepower. (SHP) The horsepower delivered by an engine shaft. Usually the same as brake horsepower.

SHAPE (*abbr.*). 'Supreme Headquarters Allied Powers Europe.'

shaped charge. See: **charge, shaped.**

shearing wire. See: **shear pin.**

shear pin. 1. A pin or wire provided in a fuze design to hold parts in a fixed relationship until forces are exerted on one or more of the parts which cause shearing of the pin or wire. The shearing is usually accomplished by setback or set forward (impact) forces. The shear member may be augmented during transportation by an additional safety device. 2. In a cartridge actuated device, a locking member which is released by shearing. Called 'shearing pin' in this sense.

shear wire. See: **shear pin.**

sheathing. Vertical timbering used to keep the sides of the shaft from collapsing inward during search for, or removal of, unexploded bombs.

shelf life. The storage time during which an item remains serviceable.

shell. 1. A hollow metal projectile designed to be projected from a gun, containing, or intended to contain, a high explosive, chemical, atomic or other charge. 2. A shotgun cartridge or a cartridge for artillery or small arms. 3. To shoot projectiles at. For uniformity in nomenclature the term 'projectile' is now used in sense 1 and the term 'cartridge' in sense 2. See: **cartridge; projectile.**

shell case. See: **CASE, CARTRIDGE.**

shell destroying tracer. A tracer which includes an explosive element beyond the tracer element, that is designed to cause activation of the explosive by the tracer after the antiaircraft projectile has passed the target point, thus destroying the projectile to

avoid impact in friendly territory. See: **fuze, self-destroying; self-destruction.**

shell engraving. See: **body engraving.**

shell filler. Explosive or other material used to make up the filler or charge in a projectile. See: **charge** (sense 2).

shell room. A large room for the storage of projectiles.

SHF (*abbr.*). 'Super high frequency.'

shield. 1. Armor plate mounted on a gun carriage to protect the operating mechanism and gun crew from enemy fire. 2. *Elec.* A screen or device which protects electrical apparatus from being affected by outside electrostatic or magnetic fields. Cf: **shielding.**

SHIELD, GUIDED MISSILE LAUNCHER. An item specifically designed to protect launching equipment from the heat and force of exhaust gases from missile propelling units.*

shielding. 1. Electrical equipment or devices to eliminate interference and static from the radio. 2. Material or obstructions which tend to protect personnel or materiel from the effects of an atomic explosion.

SHIELD, SPARK PLUG. An item specifically designed to be placed around a spark plug for the purpose of shielding against electrical interference and having provisions for passage of the ignition cable. May also provide mechanical protection.*

shift. *Electronic computers.* To move the characters of a unit of information column-wise right or left. For a number, this is equivalent to multiplying or dividing by a power of the base of notation.

shift, arithmetic. *Electronic computers.* To multiply or divide a quantity by a power of the number base, e.g., binary 1011 represents decimal 11, therefore two arithmetic shifts to the left is binary 10100, which represents decimal 44.

shift, cyclic. *Electronic computers.* A shift in which the digits dropped off at one end of a word are returned at the other in a circular fashion; logical, nonarithmetical or circular shift.

shimmy. Excessive vibration of the front wheels of a wheeled (or half-track) vehicle, causing a jerking motion of the steering wheel.

Low-speed shimmy occurs at speeds less than about 30 mph, and is usually caused by excessive caster or excessive looseness in any part of the steering system. High-speed shimmy occurs at speeds above about 35 mph, and may be caused by low or unequal tire pressures, unbalanced front wheels, improperly acting shock absorbers, loose wheels or steering connections, or incorrect toe-in.

shipping document. Document listing the items in a shipment and showing other supply and transportation information that is required by supply and transportation agencies concerned in the movement of material. This document is used primarily for the movement of supplies from one Army installation to another and for transferring accountability.

SHOCK ABSORBER, DIRECT ACTION. A damper, either frictional or hydraulic, designed to dampen the shock of suddenly applied force and/or to control spring rebound and oscillation, usually attached to the vehicle frame, body or hull and connected to an axle, spring, spring support web or pad or between suspension arms of track-laying vehicles.*

SHOCK ABSORBER, LEVER ACTION. A damper, either frictional or hydraulic, designed to dampen the shock of suddenly applied force and/or to control spring rebound and oscillation, usually attached to the frame of a vehicle, with the arm connected by a link or linkage to the axle or spring.*

shock action. A method of attack by mobile units in which the suddenness, violence, and massed weight of the first impact produce the main effect. Tank attacks usually rely on shock action.

shock front. The outer side of a shock wave (which see) at which pressure rises from zero up to its peak value. Also called a 'pressure front.'

shock resistance. *Armor.* That property which prevents cracking or general rupture when impacted by fragments, irregular projectiles, or glancing blows from overmatching projectiles. See also: shock test.

shock test. *Armor plate.* The test to determine if the primary sample or check sample will fail under impacts of overmatching projectiles. Also called 'ballistic shock test.'

shock tube. A long tube divided into two parts by a diaphragm. The volume on one side of the diaphragm constitutes the compression chamber, the other side is the expansion chamber. A high pressure is developed by suitable means in the compression chamber, and the diaphragm ruptured. The shock wave produced in the expansion chamber can be used for the calibration of air blast gages, or the chamber can be instrumented for the study of the characteristics of the shock wave.

shock wave. 1. A boundary surface or line across which a flow of air or other fluid, relative to a body or projectile passing through the air or fluid, changes discontinuously in pressure, velocity, density, temperature, and entropy within an infinitesimal period of time. 2. Such a boundary surface or line that comes into being when an object moves at transonic or supersonic speeds. 3. Such a surface or line produced by the expansion of gases away from an explosion.

shock wave, lip. The shock wave obtained from the lip of a free jet nozzle, owing to the failure in matching of the stream pressure and the ambient exhaust pressure.

shock wave, oblique. A kind of shock wave forming an oblique angle with the line of flight greater than that of the mach wave.

The velocity of air passing through the oblique shock wave drops more than the theoretical flow that passes through the mach wave.

shock wave, reflected. A shock wave resulting from an explosion, especially from the explosion of an air-burst bomb, which is reflected from a surface or object.

shoe. 1. *Mach.* A plate, or notched piece, interposed between a moving part and the stationary part on which it bears, to take the wear and afford means of adjustment; called also slipper or gib. 2. *Automotive.* The external rubber-and-fabric casing of a pneumatic tire, which contains and protects from injury the air-filled inner tube.

shoot. 1. To project a missile with force; to fire a weapon, as a gun or cannon; to strike or hit something with a missile. 2. *To shoot down,* to cause an aircraft to fall by hitting it with missiles. 3. *To shoot something up,* to strike something with several missiles.

SHOP EQUIPMENT, FIRE CONTROL SYSTEM, TRAILER MOUNTED. A van type mobile unit which houses items of organizational maintenance equipment, not all having the same basic name, which are of a supplementary nature to a major component or equipment. The items within the collection may provide replacement parts and/or facilitate such functions as inspection, test repair, preventive types of maintenance and the like, for the specific purpose of restoring and/or improving the operational status of a component or equipment comparable to its original capacity and/or efficiency. It provides work space and may contain a heating and ventilating cabinet, and other materials associated with the fire control system.*

SHOP EQUIPMENT, FIRE CONTROL SYSTEM, TRUCK MOUNTED. A mobile unit permanently fitted with a shop set (special), spare parts cabinets, analyzers, calibrators, hand tools and other necessary equipment for testing and making repairs. It is used for field maintenance of fire control systems.*

SHOP EQUIPMENT, FORGE, BASE MAINTENANCE. A group of items consisting of the necessary equipment to do general blacksmith maintenance repair work.*

SHOP EQUIPMENT, FOUNDRY, BASE MAINTENANCE. A group of items consisting of the necessary tools and materials required in a permanent shop installation.*

SHOP EQUIPMENT, GENERAL PURPOSE REPAIR, SEMITRAILER MOUNTED. A mobile unit providing hand tools, machine tools, electric arc and oxyacetylene welding equipment, and work space for mechanics performing second, third and fourth echelons of maintenance within an organization. The unit is operable as a self-contained unit or by use of commercial power when available.*

SHOP EQUIPMENT, GENERAL PURPOSE REPAIR, TRUCK MOUNTED. A mobile unit providing various tools for use in general purpose repair work, in conjunction with other motorized shops.*

SHOP EQUIPMENT, GUIDED MISSILE, BASE MAINTENANCE. A group of special tools and equipment for performing base maintenance of a guided missile. See also: SHOP EQUIPMENT, GUIDED MISSILE, SEMI-TRAILER MOUNTED.*

SHOP EQUIPMENT, GUIDED MISSILE, FIELD MAINTENANCE. A group of special tools and equipment for performing field maintenance of a guided missile. See also: **SHOP EQUIPMENT, GUIDED MISSILE, SEMI-TRAILER MOUNTED.***

SHOP EQUIPMENT, GUIDED MISSILE, SEMI-TRAILER MOUNTED. A van type mobile unit which houses organizational maintenance equipment, not all having the same basic name, which are of a supplementary nature to a major component or equipment. The items within the collection contain special tools and equipment for performing field maintenance of a guided missile. It provides work space and may contain heating and air conditioning unit(s).*

SHOP EQUIPMENT, INTERNAL COMBUSTION ENGINE REPAIR, BASE MAINTENANCE. A group of items such as battery charges, spark plug cleaner, cylinder boring bar, valve seat grinder, hones, testing equipment, analyzer, crane, and the like, assembled for use in higher echelon maintenance operations.*

SHOP EQUIPMENT, MACHINE SHOP, BASE MAINTENANCE. A group of machine tools and related items such as machine tool attachments, cutters, and the like, to be used in a permanent shop installation.*

SHOP EQUIPMENT, ORGANIZATIONAL REPAIR, LIGHT, TRUCK MOUNTED. A mobile unit providing items such as an analyzer set, generator set, lathe, sander and an assortment of machine and hand tools. It provides work space for mechanics performing second, third and fourth echelons of maintenance within an organization.*

SHOP EQUIPMENT, SMALL TOOL REPAIR, TRUCK MOUNTED. A mobile unit providing various tools for use in small tool repair work.*

SHOP EQUIPMENT, TOOL AND BENCH, TRUCK MOUNTED. A mobile unit providing various tools for use in general repair work, in connection with other motorized shops.*

SHOP EQUIPMENT, TOOLROOM, HEAVY, BASE MAINTENANCE. A group of special tools and materials to be used in conjunction with other base maintenance shops.*

SHOP EQUIPMENT, WELDING, BASE MAINTENANCE. A group of items consisting of tools and material used in a permanent shop installation for general welding and cutting operations.*

SHOP EQUIPMENT, WELDING, TRUCK MOUNTING. A group of items consisting of tools and materials used for welding, cutting, soldering, and forging. The equipment is designed to be installed in a mobile unit.*

shop supplies. Expendable items consumed in operation and maintenance (e.g., waste, oils, solvents, tape, packing, flux, welding rod).

shoran. Sometimes *capitalized*. [*Short range navigation.*] A radar system for precision position finding, used in aerial navigation and missile guiding.

Under this system navigation is accomplished by ranging on two ground stations. Signals transmitted from the aircraft or missile trigger the two responder beacons.

short. *Specif.* A bomb or projectile hit short of the target. Cf: *over*.

short cartridge. (sht ctg) See: *cartridge, short*.

short delay fuze. See: *fuze, short delay*.

short-range radar. Equipment whose maximum range on a reflecting target of one square meter normal to the signal path exceeds 50 miles but is less than 150 miles, provided line of sight exists between the target and the radar.

short recoil. See: *recoil-operated*.

shot round. 1. Defective cartridge in which the bullet has been seated too deeply. 2. A projectile which fails to travel the expected distance or range.

shot. 1. a. A solid projectile for cannon, without a bursting charge. b. A mass or load of numerous, relatively small, lead pellets used in a shotgun, as birdshot or buckshot. 2. That which is fired from a gun as 'the first shot was over the target.' In sense 1 a the term projectile (which see) is preferred for uniformity in nomenclature.

shot group. See: *shot pattern*.

shotgun. Smooth-bore shoulder weapon. Usual classes are riot gun; skeet gun; and sporting gun. See separate entries. See also: **SHOTGUN, 12 GAGE, RIOT TYPE**.

shotgun cartridge. See: *cartridge, shotgun*.

SHOTGUN, 12 GAGE, RIOT TYPE. A manually-operated, slide action, repeating, hammerless, shoulder weapon having a solid frame. It is equipped with a bayonet attachment, hand guard, sling, and sling swivels.*

shot pattern. Design made on a surface by all the impacts of a series of shots fired under similar conditions. Also called 'shot group.'

shot tongs. Device used to lift and convey heavy projectiles in a horizontal position.

shot truck. Small truck or cart on which heavy projectiles are loaded to be run up to the breech, in loading heavy artillery. It is adjusted to the height of the breech so that the projectile can be rammed into the breech. See: **CART, PROJECTILE**.

shoulder arm. See: *shoulder weapon*.

shoulder, cartridge case. The portion of the cartridge case between the neck and the body, shaped like the frustum of a cone.

shoulder guard. Any shield over the firing mechanism of a gun designed to protect the gunner from contact; particularly, such a shield on cannon mounted in tanks, armored vehicles, and other cramped quarters. Cf: *shield*.

shoulder weapon. Any firearm designed to be braced on or against the shoulder when firing, as a rifle, carbine, bazooka launcher, etc. Cf: *hand weapon*.

SHP (*abbr*). 'Shaft horsepower.'

shpg bnd(s) (*abbr*). 'Shipping band(s).'

- shrapnel.** 1. Strictly speaking, small lead or steel balls contained in a shrapnel case which is fired from an artillery piece. The balls are projected in a forward direction upon functioning of the fuze. Shrapnel is no longer in use by US Services. 2. Also applied to munition fragments. *Popular.*
- shrapnel ball.** One of the balls used in filling a shrapnel case. See also: **shrapnel.**
- shrinkage.** The process of assembling two or more cylinders to form a compound cylinder or built-up gun. The difference between the exterior diameter of the tube and the interior diameter of the jacket before heating is known as the *absolute shrinkage*. The shrinkage per inch of diameter, that is, the absolute shrinkage divided by the diameter of the contact surface, is known as the *relative shrinkage*.
- shrinkage pressure.** *Gun construction.* The radial pressure between the contacting surfaces of two cylinders assembled by shrinkage and due to the shrinkage alone. It is expressed in pounds per square inch and acts with equal intensity on both cylinders but in opposite directions.
- sht ctg (abbr).** 'Short cartridge.'
- shutter.** A barrier in an explosive train used to stop a detonation wave. An interrupter which opens or closes as a shutter. Often used to obtain fuze safety. See: **fuze safety; interrupter.**
- shuttle bombing.** 1. The technique of bombing a target by taking off from a base, bombing the target, continuing on to another base, reloading, and bombing a target again on return to the home base. 2. The bombing of a target so nearby that a bomber makes two or more round trips to the target in a single day of operations.
- shuttling.** A movement involving two or more trips or partial trips by the same motor vehicles between two points.
Shuttle movements are used when there are not enough vehicles available to move a command intact.
- side arms.** Weapons that are worn at the side or in the belt when not in use. The bayonet, automatic pistol, revolver, etc., are side arms.
- sidebands.** *Receivers.* 1. The frequency bands on both sides of the carrier frequency within which fall the frequencies of the wave produced by the process of modulation. 2. The wave components lying within such bands.
In the process of amplitude modulation with a sine-wave carrier, the upper sideband includes the sum (carrier plus modulating) frequencies; the lower sideband includes the difference (carrier minus modulating) frequencies.
- side direction.** *Stress analysis.* The direction perpendicular to the plane of symmetry.
- side force or component.** *Stress analysis.* A force or component, perpendicular to the plane of symmetry.
- side frame.** Either of the longitudinal side members of the frame of an automotive vehicle.
- side lobe.** A lobe of energy emanating from a radar antenna that is not parallel to or coincident with the main lobe. See: **lobe.**
- sidereal time.** Time measured by reference to the apparent motion of the first point of Aries. See: **Greenwich sidereal time.**
- side slope.** Test course for testing the ability of military vehicles and others to operate on side slopes without overturning. See: **slope course.**
- side spray.** Fragments of a bursting projectile thrown sideways from the line of flight, in contrast with **base spray**, thrown to the rear, and **nose spray**, thrown to the front.
- SIDE TRUSS, LOADING RACK, GUIDED MISSILE.** A specifically designed open frame structure, with a T-shaped metal track. Provides lateral movement of launching and handling rail(s), when stored on a **RACK, LOADING, GUIDED MISSILE.***
- Sidewinder.** Name applied to a Navy air-to-air missile. Employs a 'heat seeker' type of guidance and has a range of 1 to 2 miles with a speed of approximately mach 2.5.
- siege-howitzer.** A short, heavy gun of large caliber, used for destruction of fortresses. Such a weapon was the German 11-inch (28-cm.) howitzer.
- Siemens.** A Siemens and Halske trade name for synchronous device. See: **synchro.**
- Sierra Ordnance Depot.** Ordnance Corps field installation, located at Herlong, California.
- sig (abbr).** 'Signal.'
- SigC (abbr).** 'Signal Corps.'
- sight.** 1. Mechanical or optical device for aiming a firearm or for laying a gun or launcher in position. It is based on the principle that two points in fixed relation to each other may be brought in line with a third. Sights are classified as fixed or adjustable depending on the provision made for setting windage and range, and also according to type. Glass sights comprise all sights which include an optical element, such as a collimator, telescope, periscope, etc. Iron sights are classified as either open or aperture. Aperture sights are those that are sighted through, such as peep, ring, etc. Open sights are all those that are sighted over or at, such as post, bead, notch, etc. Leaf sights are those which can be folded down for protection. 2. To aim at a target or aiming point. 3. To look through a sighting device to determine the angular direction of a point, either horizontal or vertical, in surveying or navigation, especially the angular position of the sun, a star, or a planet in navigation.
- sight base.** 1. In gunnery, the distance between the eye and the rings of an optical ring sight. 2. Mount for a gunsight.
- sight blade.** Thin, flat, metal post used as the front sight on some firearms.
- SIGHT, BORE, BREECH.** A sighting device, usually a disk or segment with a central peephole, so designed to fit in the breech end of the gun tube for the purpose of aligning the sights with the gun.* See also: **boresighting.**
- SIGHT, BORE, MUZZLE.** A sighting device consisting of: (1) a string and a web belt which is at-

tached to the outside of the muzzle end of the tube, or (2) a disk, with a central peephole, which is inserted in the bore, or (3) a short piece of tubing, with cross lines, which is inserted in the bore of a cannon.* See also: boresighting.

sight bracket. Clamp used to hold a detachable sight in position when mounted on a gun.

sight cover. Protective metallic cover fastened about a sight to guard it from being moved out of adjustment by jars or blows.

sight extension. Any device which raises the normal base or mount of a sight to provide improved or unobstructed sighting.

SIGHT, FRONT. A detachable folding leaf sight which is clamped on the muzzle end of a rifle. Used in sighting for direct fire. It is opened and closed against spring action.*

SIGHT, INFINITY. An optical instrument capable of superimposing a reticle pattern upon a target as seen through a unity power optical system.*

sighting. 1. The act or procedure of aiming with the aid of a sight. 2. The action of bringing something into view; the action of seeing something.

sighting angle. In bombing, the angle between the line of sight to the aiming point and the vertical.

At the bomb release point, the sighting angle and the dropping angle become the same.

sighting bar. Wooden device with enlarged front and rear sight, eyepiece and a movable target. It is used to train men in the proper method of aiming a small arms weapon. The eyepiece forces the student to hold his eye in proper position. Because of the size of the sights, errors of aiming are very apparent.

sighting instruments. Devices or instruments designed to aid in the pointing of a weapon.

sighting shot. Trial shot, fired to find out whether the sights are properly adjusted.

sighting station. A place from which remote-controlled weapons are sighted.

SIGHTING STATION, AIRCRAFT TURRET. An item which controls the aiming and firing operation of the turret guns in a remote control turret system. It consists of a sighting device, a means of moving the sight in azimuth and elevation, and a Selsyn circuit which indicates and receives signals from the sight to the gun turret, causing the turret movement to conform to the sight.*

sighting system. Mechanical or optical device for aiming a firearm or for laying a gun in position; all such devices required for a specific weapon or group of weapons.

SIGHT, LEAD COMPUTING, AUTOMATIC. An instrument designed to direct the fire of automatic weapons against rapidly moving targets by computing, automatically and continuously, the offset of the gun bore axis from the line of sight in such a manner that the gun is constantly pointed at the advance position of the target while the line of sight is maintained on the target.*

sight leaf. Movable hinged part of a rear sight of a

gun that can be raised and set to a desired range, or snapped down when not in use.

sight radius. Distance between the front and rear sights on a weapon.

sight, reflector. See: **TRAINER, GUN SIGHT.***

sight, rocket launcher. Either of two sights fixed to barrel on left side. Front sight consists of three studs which are used for ranges of 100, 200, and 300 yards. Intermediate or greater ranges, lead, and windage must be estimated by the firer. The rear sight is of the peep type.

sight tracking line. The line of sight from a computing gunsight reticle image to the target.

signal. A pyrotechnic item designed to produce a sign by means of illumination, smoke, sound or combination of these effects to provide identification, location, warning, etc.*

signal, altitude. See: **altitude signal.**

Signal Corps. (SigC) A technical service of the U. S. Army, charged with the development, maintenance, and operation of communications systems within the Army.

signal, drift. Floating signal dropped from an aircraft flying over water to provide a reference point for determining drift and for aiding in navigation, or marking an area or object for the aid of surface vessels. Fire, smoke, or metallic powder is released when the signal strikes the water surface.

signal, error. See: **error signal.**

signal flare. General term formerly denoting a pyrotechnic flare of distinct color and character used as a signal, and now designated under the general term **signal, illumination** (which see).

SIGNAL, FLASH, GUIDED MISSILE. A signal which simulates fuze and/or warhead operation in guided missile flights in which live warheads are not used.*

signal, illumination. A pyrotechnic item designed to produce a sign by means of illumination to provide identification, location, warning, etc. See: **signal.**

SIGNAL, ILLUMINATION, AIRCRAFT. A signal which produces a sign by illumination, designed to be discharged from aircraft.

SIGNAL, ILLUMINATION, GROUND. A signal which produces a sign by illumination, designed to be discharged from ground positions.

SIGNAL, ILLUMINATION, MARINE. A signal which produces a sign by illumination, designed to be discharged from surface craft or submarines.

SIGNAL KIT, ABANDON SHIP. A group of items consisting of a hand projector and pyrotechnic signals in a metal container designed for use with an abandon ship outfit.*

SIGNAL KIT, PYROTECHNIC PISTOL. A group of items consisting of pyrotechnic pistol(s), pyrotechnic signals, and associated items in a container. See also: **SIGNAL KIT, ABANDON SHIP.***

signal light. General term indicating a **signal, illumination** (which see) or any pyrotechnic light used as a sign.

signal pistol. See: **PISTOL, PYROTECHNIC.**

signal rocket. Rocket that gives off some characteristic color or display which has a meaning according to an established code. It is usually fired from a signal pistol or a ground signal projector.

signal, smoke. A pyrotechnic item designed to produce a sign by means of smoke to provide identification, location, warning, etc. See: **signal.**

SIGNAL, SMOKE, AIRCRAFT. A signal which produces a sign by production of smoke, designed to be discharged from aircraft.

SIGNAL, SMOKE AND ILLUMINATION, AIRCRAFT. A signal which produces a sign by production of light and smoke, designed to be discharged from aircraft.

SIGNAL, SMOKE AND ILLUMINATION, MARINE. A signal which produces a sign by production of light and smoke, designed to be discharged from surface craft or submarines.

SIGNAL, SMOKE, GROUND. A signal which produces a sign by production of smoke, designed to be discharged from ground positions.

SIGNAL, SMOKE, MARINE. A signal which produces a sign by production of smoke, designed to be discharged from surface craft or submarines.

signature. The identifying characteristics peculiar to each type of target which enable fuzes to sense and differentiate targets.

sign digit. *Electronic computers.* A character used to designate the algebraic sign of a number.

significance. *Electronic computers.* The arbitrary rank, priority, or order of relative magnitude assigned to a given position or column in a number; the significant digits of a number are a set of digits, usually from consecutive columns beginning with the most significant digit different from zero and ending with the least significant digit whose value is known are assumed relevant, e.g., 2300.0 has five significant digits, whereas 2300 probably has two significant digits.

significant digits. *Electronic computers.* The digits of a number ordered according to their significance; the significance of a digit is greater when it occupies a column corresponding to a higher power of the radix. The significant digits of a number are a set of digits from consecutive columns beginning with the most significant digit different from zero and ending with the least significant digit whose value is known or assumed to be relevant.

SILENCER, GUN. An item specifically designed to silence the explosive report(s) caused by the discharge of cartridges by small arms weapon(s). It incorporates integral chambers and/or baffles which allow the gases to expand gradually. The item may be jacketed.*

silhouette target. 1. Target whose shape is outlined against a light background although its body features cannot be clearly seen. 2. Practice target consisting of the dark image of a person or object outlined against a light background. See: **TARGET, SILHOUETTE.**

SILICONE COMPOUND. An inert inorganic resin-like material obtained from a variety of molecular combinations. When compounded with other ingredients, it can be applied to glass, paper, ceramics, finely powdered material, metal, or quartz; forms heat resisting coatings, extremely high and low temperature lubricants, hydraulic fluids, heat transfer fluids, synthetic rubber, and the like. Does not include paints and polishes which contain in part silicone compounds.*

simple machine. *Mech.* Any of six (or more) elementary mechanisms, formerly considered as the elements of which all machines were composed, including (1) the *lever* (with its fulcrum), (2) the *wheel and axle* (equivalent to a continuous lever, as is the next), (3) the *pulley*, (4) the *inclined plane* (making forced closure with a relatively sliding piece on its inclined face), (5) the *wedge* (equivalent to a double inclined plane), and (6) the *screw* (combining a male and a female screw rotation into a straight-line motion, or vice versa). Some writers include the toggle joint and the hydraulic press. The so-called funicular machine, although not a machine, is sometimes included.

simulated. 1. Being like something else; considered for the purpose as the same as something else. 2. Artificially creating an illusion of something natural. 3. Artificially creating the conditions of a natural or real situation.

simulator. 1. Any machine or apparatus that simulates an item, condition or set of conditions. 2. A test instrument used to derive and thereby permit study of probable aerodynamic behavior in controlled flight under specific initial conditions. Certain components of the missile guidance system, such as the receiver, servo-loop, etc., are connected into the simulator circuitry. Also certain aerodynamic parameters of the specific missile must be known and set into the simulator. Most simulators are applicable to a single plane, which in case of the yaw simulator is the yaw plane. The missile is assumed to be completely roll stabilized.

SIMULATOR, AIRCRAFT. An item which, by controlled movement, reproduces the characteristics of an aircraft in flight on a map or plotting board.*

SIMULATOR, ANTIPERSONNEL MINE PROJECTILE. An item designed to hold a spotting charge. When the spotting charge is ignited, it causes the item to simulate the projectile of a bounding antipersonnel mine.*

SIMULATOR, BOOBY TRAP. An item for use during maneuvers and in troop training, providing a small pyrotechnic device which can be installed as a 'safe' booby trap. Used to give training in the installation and use of booby traps and instill caution in troops who may be exposed to traps set by the enemy.

SIMULATOR, FLASH, ARTILLERY. An item designed to simulate the flash of artillery fire.* Used in the training of artillery observers and troops in army maneuvers, and as a decoy in forward combat areas.

SIMULATOR, GUIDED MISSILE FLIGHT. An item that simulates signal voltages for ground guidance equipment, that are analogous to signals received from a guided missile in flight. Excludes **SIMULATOR, RADAR SIGNAL**.*

SIMULATOR, HAND GRENADE. An explosive pyrotechnic item designed to simulate the flash and sound of a hand grenade.*

SIMULATOR, PROJECTILE AIR BURST. An item used to simulate the burst of an artillery projectile by producing a puff of smoke.

SIMULATOR, PROJECTILE GROUND BURST. A pyrotechnic device used to provide battle noises and effects during troop maneuvers.

SIMULATOR, RADAR SIGNAL. An item whose electrical output is applied directly to the indicator of a radar set to produce artificial radar echo indications.*

simulator, yaw (pitch). A test instrument used to derive and thereby permit study of probable aerodynamic behavior in controlled flight under specific initial conditions. Certain components of the missile guidance system, such as the receiver, servo-loop, etc., are connected into the simulator circuitry. Also, certain aerodynamic parameters of the specific missile must be known and set into the simulator. Most simulators are applicable to a single plane, which in case of the yaw simulator is the yaw plane. The missile is assumed to be completely roll stabilized.

sing. (abbr). 'Singular.'

single acting. Acting in one direction only; as, a *single acting plunger*; a *single acting engine* (admitting the working fluid on one side of the piston only).

single action. Method of fire in some revolvers and shoulder arms in which the hammer must be cocked by hand, in contrast to **double action** in which a single pull of the trigger both cocks and fires the weapon.

single-address (instruction) code. *Electronic computers.* An instruction in general consists of a coded representation of the operation to be performed and of one or more addresses of words in storage. The instructions of a single-address code contain only one address.

single base propellant. See: **propellant**.

single compound explosive. Explosive composed of a single chemical compound. For example, TNT.

single loader. See: **single-shot weapon**.

single perforated grain. A cylindrical propellant grain with a single perforation located in its axis. This type of granulation is used in propelling charges for several calibers of guns, and in rockets.

single-recoil system. Classification of recoil system to distinguish from the **double-recoil system**, which see. In the latter case there are two complete recoil systems interposed between the gun and the nonrecoiling parts in such a manner that one of the complete systems moves in recoil. In the former case,

there is only one recoil system between the gun and the nonrecoiling parts.

single sampling. Sampling inspection in which a decision to accept or to reject is reached after the inspection of a single sample.

single shot. 1. Loaded by hand for each shot. 2. Semiautomatic operation of an automatic gun, in which the trigger must be pulled for each shot fired.

single-shot probability. Probability that a single projectile fired against a target will 'kill' that target under a given set of conditions.

single-shot weapon. Gun, such as an old-style rifle, that is loaded by hand for each shot.

single stage rocket. A rocket or rocket missile to which the total thrust is imparted in a single phase, by either a single or multiple thrust unit. Cf: **multi-stage rocket**.

single star. Indicates, in the nomenclature of a **SIGNAL, ILLUMINATION, AIRCRAFT**, freely falling, single star (light) of the color indicated.

sink. A point or element in a system where energy is dissipated or otherwise removed from the system.

sinking valve. See: **PLUG, FLOODER, UNDER-WATER MINE**.

sintered iron. Ferrous metal, either pure iron or iron alloy, which has been processed from powdered metal through the sintering process. Sometimes used for rotating bands.

sinusoidal. Varying proportionally to the sine of an angle or time function. Sometimes written 'sinoidal.'

Sioux Ordnance Depot. Ordnance Corps field installation, located at Sidney, Nebraska.

site. 1. Position of anything, for example, the position of a gun emplacement. 2. Vertical angle between the horizontal and a line joining the target and the muzzle of a weapon. In this meaning, usually called 'angle of site.'

site scale. Instrument for setting off site in laying a gun.

six by four. As applied to motor vehicles, six wheels of which four are driving wheels, dual wheels being considered as one wheel. It is usually written 6×4 .

six by six. As applied to motor vehicles, six wheels of which six are driving wheels, dual wheels being considered as one wheel. It is usually written 6×6 .

sixty-five degree centigrade surveillance test. See: **heat tests**.

size dimension. In dimensioning, a specified value of a diameter, width, length, or other geometrical characteristic directly related to the size of an object.

skate mount. Mounting of a machine gun that permits it to travel on a continuous track extending around the inside of the body of a vehicle. The gun can be locked in any position for use.

skeet gun. Classification of shotguns which includes those with 26-inch improved cylinder barrels. Other classifications are **riot gun** and **sporting gun**.

skid chain. See: **CHAIN ASSEMBLY, TIRE**.

skid fin. A longitudinal vertical surface, usually placed above the upper wing to increase the lateral stability.

SKID, LAUNCHING, DEMOLITION CHARGE. A specially designed item of boat type construction with runners used for transporting and launching a **DEMOLITION KIT, PROJECTED CHARGE.***

SKID, PLATFORM. An item consisting of a metal and/or wood deck, runners, legs, or legs and wheels, designed for storing and transporting materials. It may include coupler(s) for towing. Excludes **SLED** (as modified).*

skin friction. The friction of the air against the outside of a moving aircraft, projectile, or the like, esp. at high speeds; the drag or resistance caused by this friction. See: **drag, skin-friction.**

skip bombing. Bombing by releasing one or more bombs from a plane flying at a low altitude, so that the bomb or bombs glance off the surface of the water or ground and strike the target.

skirt. A name given the lower part of a parachute canopy.

skirting armor. See: **skirting plate; spaced armor.**

skirting plate. A thin plate, which is spaced a considerable distance in front of the main armor plate and which acts as a passive form of resistance to the jet of shaped charge ammunition. Cf: **spaced armor.**

sky glow. Illumination caused by a weapon firing from a defiladed position.

sky screen. See: **chronograph.**

sky wave. A radio wave which travels upward into space and may or may not be returned to earth by reflection from the ionosphere.

SL (abbr). 'Stock list.'

slack. Looseness or play in a mechanism, as the play in the trigger of a small arms weapon.

slack adjuster. See: **ADJUSTER, SLACK, BRAKE.**

slant distance. The line-of-sight distance between two points neither vertical to each other nor at the same elevation.

slant plane. In anti-aircraft artillery, the plane containing the target course line and the pintle center of the gun.

slant range. The straight line distance between two points not at the same elevation.

This term is used in reference to range between an airborne gun or radar set and a ground target or other target not at the same elevation; between an anti-aircraft gun and the future position of a target; between a bomber and a target; etc. Cf: **horizontal range.**

slat. A movable auxiliary airfoil running along the leading edge of a wing, remaining against the leading edge in normal flight conditions, but lifting away from the wing to form a slot at certain angles of attack. See: **movable slot.**

slaved gyro. A gyroscope that is controlled by a magnetic force through a transmitter as in a Gyrosyn; an instrument that employs such a device.

slave station. A station of a synchronized group whose emissions are controlled by a **master station.** Used in hyperbolic navigation.

SLED, ARTILLERY. A flat-bottomed steel item usually curved up at one end. It usually has wheel welds and attaching facilities for fastening the wheels of artillery mounts. Primarily used to transport weapons over snow, ice, swamps or rough terrain.*

sleeve target. See: **target, sleeve, towed.**

sleigh. Part of a gun carriage which supports the recoil mechanism and barrel of the gun and slides with the gun on recoil, guiding it in runways in the cradle.

slenderness ratio. A configuration factor expressing the ratio of a missile's length to its diameter.

slew. Swing a gun sidewise; traverse a gun.

slewing mechanism. Device which permits rapid traverse or change in elevation of a weapon or instrument.

slide. 1. Sliding part of the receiver of certain automatic weapons. 2. Sliding catch on the breech mechanism of certain weapons.

slider. A fuze or exploder component that interrupts the explosive train when the device is in the unarmed condition, and that moves during arming in such a way as to render the explosive train operative. See also: **interrupter.**

sliding block. See: **breechblock, sliding wedge.**

sliding gear. A change gear in which speed changes are made by sliding gears along their axes, so as to place them in or out of mesh.

sliding mount. A type of railway mount in which the recoil energy is absorbed by sliding friction.

sliding wedge breechblock. See: **breechblock, sliding wedge.**

sling. 1. A gun sling (which see). 2. Strap attached to a mortar or another weapon to be placed over a man's shoulder to sustain the weight of the weapon.

SLING, CARRYING, GUNSIGHT. A sling consisting of straps, buckles and D-rings, designed for carrying aircraft gunsights when not in box.*

SLING, ROCKET, AERIAL DELIVERY. A sling consisting of cables, brackets, clamps, and rings, specifically designed for transporting one or more rockets by helicopter.*

SLING, ROCKET HANDLING. A sling consisting of an I-beam and straps, specifically designed for handling a rocket.*

SLING, ROCKET LAUNCHER, AERIAL DELIVERY. A sling consisting of straps and brackets, specifically designed for transporting a rocket launcher by helicopter.*

SLING, ROCKET TRUCK, AERIAL DELIVERY. A sling consisting of straps, brackets, hooks, and rings, specifically designed for transporting a **TRUCK, ROCKET** by helicopter.*

slivers. Pieces of propellant grains of triangular cross section which remain unburned when the web (which see) of multiperforated grains has been burned through. Usually burning of the slivers is completed before the projectile leaves the bore of a gun; however, in the case of a rocket motor the slivers are either discharged with the exhaust gases or left in the rocket case, and the sliver loss typically represents 3 to 4 percent of the propelling charge.

slope. Measure of an incline, wall, or ramp in terms of the ratio of vertical rise to horizontal distance. Often expressed as a percent and termed 'percent slope.'

slope angle. The direction of a flight path expressed as an angle projected on the vertical plane.

slope course. A proving ground facility consisting of a large mound of earth. On the various sloping side of this mound are built roads having different grades. The 5, 10, 15, and 20 per centum slopes are timber revetted to prevent washing.

This slope course is used to measure the slope performance of military vehicles and others, including maximum speed on various grades, the most suitable gear for best performance, traction, and the holding ability of brakes.

slope deviation. The difference between the projection in the vertical plane of the actual path of movement of a vehicle and the planned slope for the vehicle expressed in terms of either angular or linear measurement.

slope, flight path. See: **angle, flight path.**

slope of fall. Ratio between the drop of a projectile and its horizontal movement; tangent of the angle of fall.

slope, percent. See: **slope.**

slot. 1. A narrow opening in the side, top, bottom, or end of something, as for looking out or for poking something through. 2. *Specif.* An air gap between a wing and the length of a slat or certain other auxiliary airfoils, the gap providing space for airflow or room for the auxiliary airfoil to be depressed in such a manner as to make for smooth air passage on the upper surface. 3. Any of certain narrow apertures made through a wing to improve aerodynamic characteristics.

In sense 2, the slot associated with a slat appears only when the slat lifts away from the wing, whereas the slot associated with a slotted aileron changes its shape as the aileron is depressed. Both are called 'movable slots' or 'automatic slots.' In sense 3, the slot is sometimes called a 'fixed slot.'

slotted-screw breechblock. See: **breechblock, interrupted screw.**

slow fire. Type of firing used in instructing beginners and in record practice, in which no time limit for completing a score is set. See: **deliberate fire.**

sludge. Residue of dirt, metal chips, etc., in motor crankcase after oil is drained.

slug. As pertains to shaped charge ammunition: Mas-

sive and relatively slow-moving remnant of the collapsed metal liner, as distinguished from the jet.

slush. 1. A soft mixture of grease or oil and other materials, used for protecting the surface of metal parts against corrosion. 2. To apply slush or oil to a surface, as to the bore of a gun.

SM (abbr). 1. 'Strategic missile.' 2. 'Supply Manual.'

small arm. A gun of small caliber. Within the Ordnance Corps the term is presently applied to guns of a caliber up to and including one inch. Such hand and shoulder weapons as pistols, carbines, rifles, and shotguns are included in the term.

small arms ammunition. (SAA) Ammunition for use in small arms; rounds of a caliber up to, and including, 30 millimeters (1.181 inches). Cf: **artillery ammunition.**

small-bore practice. Practice in firing with small arms using caliber .22 ammunition instead of the standard service rounds.

small of the stock. Part of the stock of a small arms weapon ordinarily gripped by the right hand; part of the stock immediately behind the receiver and trigger assembly; pistol grip in some styles of stocks.

SMG (abbr). 'Submachine gun.'

S-mine. Small antipersonnel mine of the 'bounding' type, employed by the Germans during WW II.

smkls (abbr). 'Smokeless.'

smoke. 1. Suspension of small liquid or solid particles in air. 2. Filling for smoke munitions such as bombs, projectiles, and grenades. 3. As part of ammunition nomenclature, signifies that the munition is intended to produce smoke of the type(s) or color(s) indicated. 4. To produce smoke. See also: **chemical agent.**

smoke and flash defilade. 1. Condition in which the smoke and flash of a gun are concealed from enemy observation by an intervening obstacle, such as a hill or ravine. 2. Vertical distance by which the smoke and flash of a gun are concealed from enemy observation.

smoke blanket. Dense concentration of smoke (sense 1, which see). Established over and around friendly areas to protect from observation and precision bombing. Established over enemy areas to protect attacking aircraft from anti-aircraft fire.

smoke bomb. See: **BOMB, SMOKE.**

smoke candle. Munition which produces smoke by vaporizing a smoke producing oil. Cf: **SMOKE POT.**

smoke curtain. Vertical smoke screen placed between friendly and hostile troops or installations to prevent enemy ground observation. See: **smoke screen.**

smoke generator. See: **GENERATOR, SMOKE, MECHANICAL.**

smoke grenade. See: **grenade, smoke.**

smokeless. (smkls) When used in cartridge or propelling charge nomenclature, indicates that the ammunition is relatively smokeless when used in the weapon for which intended.

smokeless powder. (SP) See: **smokeless propellant.**

smokeless propellant. (SP) Term used to distinguish the relatively 'smokeless' propellants from black powder which produces a heavy smoke and which they have supplanted as a propellant. More appropriate classifications are given under the term **propellant** (which see).

SMOKE POT. A cylindrical metal munition designed to produce smoke for screening or signalling purposes, either by combustion of a smoke producing mixture or by combustion of a fuel mixture to vaporize a smoke producing oil. It may be with or without igniting device and filling, and is not intended for throwing or for firing from weapons.*

smoke pot, floating. SMOKE POT that emits dense smoke when ignited and which floats on the surface of water to provide a temporary screen.

smoke projectile. See: **projectile, smoke.**

smoke screen. A screen of smoke used to hide a maneuver, force, place, or activity. Smoke screens may be generated on the ground by use of a GENERATOR, SMOKE, MECHANICAL; a grenade, smoke; or a SMOKE POT. They may also be laid down by aircraft using smoke tanks, or by artillery fire.

smoke shell. See: **projectile, smoke.**

smoke signal. See: **signal, smoke.**

smooth-bore. Having a bore that is smooth and without rifling. Shotguns and mortars are commonly smooth-bore.

snake, demolition. Specially constructed explosive charge used for clearing paths through mine fields or for denudation. It is so constructed that it may be pulled near the obstacle, then finally pushed into place by a tank. Recent design, with necessary accessories, is designated DEMOLITION KIT, PROJECTED CHARGE.

Snark. Name applied to an Air Force surface-to-surface, long range, strategic missile, powered by a turbojet engine. Has a combination inertial and celestial guidance system. This winged missile travels just below sonic velocity and is also known as a pilotless bomber.

sniper. An especially skilled rifleman, usually having special equipment, whose mission is to kill key enemy personnel.

sniperscope. Device combining a snooperscope and a carbine or other firearm, which enables the operator to see and shoot at targets in the dark.

SNL (*abbr.*). 'Standard Nomenclature List.'

snooperscope. Hand-carried device combining a source of infrared rays with a viewer, to enable the operator to see in the dark. See also: **sniperscope.**

snorkel. A tube or pair of tubes for air intake and exhaust that can be extended above the surface of the water for operating submerged submarines. The term is now also applied to almost any tube which similarly supplies air for underwater operation, whether it be for materiel or personnel.

snow. A type of interference resembling falling snow that appears on a radarscope. See: **noise.**

snowmobile. An automobile having runners instead of front wheels, and tractor wheels in the rear, for use in the snow.

snubber. *Auto.* A mechanical device consisting essentially of a drum, spring, and friction band. Connection is made between axle and frame. The purpose is to slow the recoil of the spring and reduce jolting.

SOFAR (*abbr.*). 'Sound fixing and ranging.'

soft point. In small arms cartridge nomenclature, indicates a bullet with a soft point, intended to spread upon striking a target with some resistance, such as the flesh of game. Not intended for, nor permitted to be used in, combat operations.

soil trafficability. The capacity of a soil to withstand traffic, esp. the traffic of military vehicles.

solenoid. 1. A coil of closely wound turns of wire, which, when electrified, acts as an electromagnet. 2. Such a coil surrounding an iron rod or bar which is free to move under the magnetic influence of the coil. In sense 2, the solenoid is often used for the remote control of aircraft machine guns.

solenoid brake. *Elec.* Brake in which the brake shoes are operated by the magnetic action of a solenoid.

solenoid coil. See: **chronograph.**

solid fuel. Any fuel in a solid state. Specifically, a solid propellant as used in a ROCKET MOTOR.

solid propellant. A propellant (which see) in a solid state, as distinguished from a liquid propellant.

solid propellant, guided missile. See: **PROPELLANT, SOLID, GUIDED MISSILE.**

solid rocket. Popular term for a rocket using solid propellant.

solvent recovery. Process, in the manufacture of nitrocellulose propellant, by which the ether-alcohol mixture used for colloidizing the nitrocellulose is recovered by evaporating and condensing the solvent.

soman. (GD) Pinacolyl methylphosphonofluoridate, one of the G-agents or nerve gases. A war gas. See also: **chemical agent; nerve gas.**

sonar. [*Sound navigation ranging.*] A method or system, analogous to radar, in which high-frequency sound waves are emitted so as to be reflected back from objects of interest, used esp. by ships for detecting underwater objects, such as submarines or mines; an apparatus used for this purpose.

sonde. In telemetering, the complete airborne telemetering system in the vehicle.

sonic. Of or pertaining to sound; esp. in ordnance contexts, to the speed of sound.

sonic speed. The speed of sound (which see).

SOP (*abbr.*). 'Standing operating procedure.' Sometimes used adjectivally in the sense of 'normal,' 'usual,' or 'standard,' as in 'this condition remained SOP.' This abbreviation is pronounced letter by letter.

sound and flash ranging. Two distinct and separate but supplementary systems of locating enemy weapons and, secondarily, adjusting friendly counterfire by: (1) observation by sonic devices on the sound produced by the enemy weapon in firing or by the friendly projectile in exploding; or (2) visual observation of the flash produced or of the point of burst of the enemy weapon or friendly projectile.

sound detector. See: sound locator.

sounding rocket. See: rocket, sounding.

sound lag. Time necessary for a sound wave to travel from its source to the point of reception.

sound locator. A device formerly used to detect aircraft in flight by sound.

A sound locator comprised four horns, or sound collectors (two for azimuth detection and two for elevation), together with their associated mechanisms and controls, which enabled the listening operators to determine the position and angular velocity of aircraft.

SOUND MEASURING SET. All the items and components required to make sound level measurements. It delivers a visual indication relative to the intensity of sound being measured. It may include the following: separate outputs for controlling other instruments, electron tubes, power source, microphones, cable assemblies.*

sound ranging. Method of locating the source of a sound, such as that of a gun report or a projectile burst, by calculations based on the intervals between the reception of the sound at various previously oriented microphone stations. See also: flash ranging; sound and flash ranging.

sound ranging plotting board. Standard plotting board used in locating the source of a sound from the data supplied by the various microphone stations. See: sound ranging.

SOUND RANGING SET. A complete electronic set specifically designed for detecting and/or determining the range and bearing of sounds. Excludes sonar.*

sound recording system. *Electroacoustics.* A combination of transducing devices and associated equipment suitable for storing sound in a form capable of subsequent reproduction.

sound reproducing system. *Electroacoustics.* A combination of transducing devices and associated equipment for reproducing recorded sound.

SP (abbr). 'Smokeless powder; smokeless propellant.'

space. *Astronautics.* The region beyond the sensible atmosphere of the earth. The level at which space begins is indefinite, but some authorities place it at about 120 miles above the earth.

spaced armor. An arrangement of armor plate, using two or more thicknesses, each thickness spaced from the adjoining one. Used as protective device, particularly against shaped charge ammunition. Cf: skirting plate.

space flight. The science of extra-terrestrial flight of unmanned vehicles. Cf: space travel.

SPACER, BATTERY, DEPTH CHARGE. An item designed to position a battery in relation to the firing mechanism within a depth charge.*

spaceship. Any vehicular craft designed to travel in outer space.

space travel. The science of extra-terrestrial flight of manned vehicles. Cf: space flight.

space warfare. Warfare conducted by use of weapons brought to bear upon earth targets from outer space.

space weapon. A weapon that travels through space and is directed against an enemy target whether on the ground, in the air, or in space.

spade. Sharp part of a gun trail that is embedded in the ground and restricts movement of the carriage during recoil.

spade grip. D-shaped handle for pointing the gun, fastened on the rear of the receiver of certain flexible automatic weapons.

spall. Fragment(s) torn from either surface of armor plate, such as might result from the impact of kinetic energy ammunition (which see), or the functioning of chemical energy ammunition (which see).

spalling. Production of a spall(s) (which see).

spall resistance. That property of armor which prevents the armor from projecting spalls into the fighting vehicle when struck by a projectile.

span. 1. The maximum dimension of an airfoil from tip to tip as of a wing, rotorblades, or a horizontal tail; the measure of this dimension. 2. The maximum width of an aircraft from wingtip to wingtip. 3. *Specif.* Wingspan.

span loading. The loading placed on an aircraft expressed in terms of the weight divided by the wingspan (if a monoplane) or by the span of its equivalent monoplane wing (if a multiplane).

spanning tray. Removable hollowed tray on which the elements of separate loading ammunition slide when being inserted in the breech of a cannon.

spar. Any principal structural member in an airfoil, esp. in a wing, running from tip to tip or from root to tip.

spare part. In supply usage, any part, component, or subassembly kept in reserve for the maintenance and repair of major items of equipment.

spare parts list. List approved by designated authorities, indicating the total quantities of spare parts, tools and equipment necessary for the maintenance of a specified number of major items for a definite period of time.

spare parts set, 280 millimeter dummy projectile. See: BAND SET, 280 MILLIMETER DUMMY PROJECTILE.

spark. The ignition fire produced in a cylinder of an internal combustion engine; the apparatus producing or controlling this fire.

spark coil. A device used to raise (or 'step up') the voltage by electromagnetic induction. An induction coil, esp. of an internal combustion engine.

SPARK GAP. An item designed to act as a switching or triggering device by means of a disruptive discharge of electricity (a spark) between the electrodes. The insulation (usually air) between the electrodes is self-restoring after passage of the spark.*

spark knock. The knock produced in an internal combustion engine by operation with the spark too far advanced. Cf: detonation.

spark lead. The amount of advance by which the production of the spark in cylinders of an internal combustion engine precedes the arrival of the piston at the top dead center position.

SPARK PLUG. An item containing two or more electrodes across which an electric spark is discharged to ignite a fuel and air mixture, primarily in internal combustion engines. Excludes GLOW PLUG and ELECTRODE.*

sparkproof. 1. Will not be ignited or damaged by sparks. 2. Will not generate sparks.

spark range. A firing range in which missiles in free flight can be photographed by the light from an electric spark which is triggered by passage of the projectile.

Sparrow. Name applied to a series of Navy air-to-air supersonic missiles, solid propellant powered. For use against high or low altitude targets, employing evasive tactics. A beam rider with homing radar.

spatial. Of or pertaining to space; occupying space; occurring in, or conditioned by, space; considered with relation to space.

spatiotemporal. Of or pertaining to space time; having extent and duration.

spchgr (abbr). 'Supercharger.'

spec (abbr). 'Specification.'

special equipment vehicle. Vehicle consisting of a general purpose vehicle with special body, equipment, and/or kit installed to fill a specialized role or requirement.

special purpose item. In supply usage, an item designed to fill a special requirement, and having a limited application.

For example, a wrench or other tool designed to be used for one particular model of a piece of machinery is a special purpose item; a special purpose vehicle can also be regarded as a special purpose item.

special purpose vehicle. Vehicle having special chassis, or a general purpose chassis incorporating major modifications, designed to fill a specialized requirement. All tractors (except truck tractors) and tracklaying vehicles, regardless of design, size, or intended purpose, are classified as special purpose vehicles. See: general purpose vehicle; special equipment vehicle.

special test and handling equipment. *Maintenance and supply.* An end item having limited application specifically designed for use in conjunction with the operation, care, calibration, or maintenance of another end item. (Materials handling equipment excepted.)

special tools. Types of tools and tool equipment designed to perform specific operations on specific pieces of material.

special weapon. Any out-of-the-ordinary modern weapon, such as an atomic, radiological, or biological weapon.

Special Weapons-Ammunition Command. (SWAC) Field command of the Ordnance Corps established at Picatinny Arsenal for the purpose of maintaining close coordination among the various Ordnance elements in the special weapons and traditional ammunition fields.

pecific (abbr). 'Specific' or 'specifically.'

specification. (spec) 1. *pl.* A detailed statement that sets forth the requirements or standards for a piece of equipment, a material, a service to be performed, etc. 2. *sing.* An item in such a statement. See also: Government specifications.

pecific density. Mass per unit volume. In interior ballistics, specific density is usually distinguished from loading density and gravimetric density.

pecific fuel consumption. Mass of fuel used relative to an appropriate unit of output; jet engines usually are rated in pounds of fuel per pound of thrust per hour, while reciprocating engines are rated in pounds of fuel per horsepower-hour.

specific heats, ratio of. See: ratio of specific heats.

specific impulse. The thrust per unit mass rate of flow produced by burning a specific fuel or fuel combination, expressed in pounds(force)-seconds per pounds(mass). Used especially in reference to a rocket propellant. It is also known as the *performance index*.

specific thrust. The ratio between the thrust of a jet reaction motor and the total propellant flow rate producing the thrust.

spectrograph. An optical instrument designed to break up the light from a source into its constituent wave lengths and to provide a means of qualitative or quantitative study of the spectrum thus formed. The instrument essentially consists of four parts: the slit, the lenses, the dispersion system and photographic or photoelectric system.*

spectrometer. An optical instrument designed to break up the light from a source into its constituent wave lengths and to provide a means of qualitative or quantitative study of the spectrum thus formed. Basically all designs consist essentially of four parts: the slit, the lenses, the dispersion system and the measurement system.*

spectrophotometer. An instrument for measuring transmission or apparent reflectance of light as a function of wavelength, permitting accurate color analysis or accurate comparison of luminous intensity of two sources at specific wavelengths.

spectroscope. An optical instrument designed to break up the light from a source into its constituent wave lengths for the observation of spectra, thus providing a means of qualitative or quantitative study of the spectrum formed. The instrument essentially con-

ing of scroll elliptic on bottom, joined at both ends by shackles.

SPRING, LOADING, BALL BEARING. A tri-semi-elliptical spring designed primarily to take up any existing endwise play between a bearing and housing. When applied against the faces of a bearing it creates a light thrust load to the bearing.*

spring modulus. The additional force necessary to deflect a spring an additional unit distance. If a certain spring has a modulus of 40 pounds per inch, a 40-lb weight will compress it 1 inch, an 80-lb weight 2 inches, and so on. It is apparent that the energy stored in a spring is $\frac{1}{2}$ (spring modulus x deflection²).

spring recuperator. See: spring counterrecoil mechanism.

spring, ring. A spring composed of a series of metal rings of alternately larger and smaller diameters which bear against each other along wedge shaped or conical faces. As the spring is loaded in compression, the individual units are driven together and stressed in tension or compression.

spring, spiral. A spring consisting of a wire coiled in a flat spiral, or in a helix.

SPRING, SPIRAL, TORSION. A spring consisting of a length of material wound on itself in the form of a spiral, finished at the ends and designed to exert pressure in a rotating direction around the spring axis. The material may be of various cross-sectional shapes such as round or rectangular. Excludes springs designed for thermal actuation (springs in which the torsion forces are designed to be counteracted by changes in temperature).*

spring-type equilibrator. See: equilibrator.

spring, volute. A spiral or scroll-like spring. Widely used on tanks. Characterized by the ability to carry a much greater load per inch deflection when loaded to capacity than when carrying normal static load. Friction between adjacent coils is high but variable with the terrain traversed, moisture, etc. Usually the friction present is sufficient to maintain freedom from pronounced pitching.

spring wheel. One in which, by the action of springs interposed between the shaft boss and the rim, irregular driving forces and shocks are neutralized.

sprocket. 1. A tooth or projection, as on a wheel, shaped so as to engage with the links of a chain. 2. A sprocket wheel; a toothed wheel adapted to drive a chain or track.

In tracklaying vehicles the drive sprockets, or track drive sprocket assemblies, are formed by bolting two sprockets (steel plates with teeth formed in their outer circumferences) to a hub (sprocket hub) which, in turn, is bolted to the flanged end of the final drive sprocket shaft. Often, the drive sprockets are interchangeable.

sprung and unsprung weight. Sprung weight is the weight which is carried by the springs including the frame, radiator, engine, clutch, transmission, body, load, etc. *Unsprung weight* is the weight of the

various parts that are not carried on the springs such as wheels, axles, brakes, etc.

Sprung weight rides easier than unsprung weight, so car manufacturers try to reduce unsprung weight as much as possible. Sprung parts are better protected against road shocks. By mechanically linking the sprung weight and the unsprung weight to a hydraulic mechanism (hydraulic shock absorbers), the energy created by road shocks can be dissipated instead of transferred to the vehicle or its contents.

spur gear. The simplest form of toothed wheel used in machinery with radial teeth parallel to the axis of the wheel. Also called 'spur gear wheel.'

Sputnik. Name given to first man-made earth satellite, launched by Russia on 4 October 1957. The second earth satellite, launched by Russia on 3 November 1957 is sometimes called 'Sputnik II.'

SQ (abbr). 'Superquick.'

SQ-DEL (abbr). 'Superquick and delay.'

square base. Descriptive of a bullet or projectile with cylindrical base (as opposed to a boattail projectile). Also called 'flat base.' Cf: boattail.

square engine. An engine in which the stroke is equal to the diameter of the cylinder bore.

square wave. A wave which alternately assumes two fixed values for equal lengths of time, the time of transition being negligible in comparison with the duration of each fixed value.

squash head. A term used, especially by the British, for a high explosive plastic (HEP) projectile. See: projectile, high explosive plastic.

squeeze bore. See: tapered bore.

squelch. To automatically quiet a receiver by reducing its gain in response to a specified characteristic of the input.

squib. 1. Used in a general sense to mean any of various small size pyrotechnic or explosive devices.

2. *Specif.* A small explosive device, similar in appearance to a detonator (which see), but loaded with low explosive, so that its output is primarily heat (flash). Usually electrically initiated, and provided to initiate action of pyrotechnic devices and rocket propellants. See also: SQUIB, ELECTRIC.

SQUIB, ELECTRIC. An item designed for electrical firing of burning type munitions. It consists essentially of a tube containing a flammable material, and a small charge of powder compressed around a fine resistance wire connected to electrical leads or terminals.*

SR (abbr). 'Special Regulations.'

SS (abbr). 1. 'Spin stabilized.' 2. 'Surface-to-surface.'

SSM (abbr). 'Surface-to-surface missile.'

SSR (abbr). 'Spin stabilized rocket.'

stab detonator. See: DETONATOR, STAB.

stability. 1. *Aerodynamics.* A characteristic of a projectile, missile, or aircraft in flight that causes it, if disturbed from its condition of equilibrium or steady flight, to return to that condition; similar characteristic of a parachute and its burden. 2.

Explosives. The property of an explosive against detonating or deteriorating under normal storage conditions.

stability, arrow. The partial derivatives of yawing and pitching moments with respect to angles of attack in yaw and pitch. Also called weathercock stability.

stability derivatives. See: derivatives, stability.

stability, directional. Stability with reference to disturbances about the normal axis of an aircraft, i.e., disturbances which tend to cause yawing.

stability, dynamic. 1. The measure of a projectile's ability to limit yaw. 2. That property of an aircraft or missile which causes it, when its state of steady flight is disturbed, to damp the oscillations set up by the restoring forces and moments and gradually return to its original state.

stability factor. A factor which indicates the relative stability (ability to maintain a fixed attitude in flight) of a projectile under given conditions. It depends upon the moments of inertia of the projectile, its spin, and the moment of the aerodynamic force about the center of gravity. A necessary, but not sufficient, condition for stability is that the stability factor be greater than unity or negative. Stability factor is sometimes referred to as the coefficient of gyroscopic stability.

stability, inherent. Stability of an aircraft owing solely to the disposition and arrangement of its fixed parts, i.e., that property which causes it, when disturbed, to return to its normal attitude of flight without the use of the control or the interposition of any mechanical device.

stability, lateral. Stability with reference to disturbances about the longitudinal axis, i.e., disturbances involving rolling or side-slipping. The term 'lateral stability' is sometimes used to include directional and lateral stability, since these cannot be entirely separated in flight.

stability, longitudinal. Stability with reference to disturbances in the plane of symmetry, i.e., disturbances involving pitching and variation of the longitudinal and normal velocities.

stability, static. That property of an aircraft which causes it, when its state of steady flight is disturbed, to develop forces and moments tending to restore its original condition.

stability test. Accelerated test to determine the probable suitability of an explosive material for long term storage. See: heat tests.

stabilization. Expression of the ability of a missile in flight to maintain a fixed attitude relative to the trajectory. See: fin stabilization; spin stabilization.

stabilize. To give or cause stability (which see).

stabilizer. Any airfoil or any combination of airfoils considered as a single unit, the primary function of which is to give stability to an aircraft or missile.

STABILIZER, BOMBSIGHT AND AUTOMATIC PILOT. A gyro-operated mechanical device used in conjunction with bombsights and automatic pilots. It is designed to prevent an aircraft from departing

from a condition of steady motion or, in case such a motion is disturbed, restores it to its original state of equilibrium.*

STABILIZER, HORIZONTAL. A fixed horizontal airfoil, forming a part of the main directional control surfaces, parallel or approximately parallel to the lateral axis of the aircraft. The functional purpose of the horizontal stabilizer is to maintain uniformity of motion in relation to the lateral axis in flight.*

STABILIZER, TORPEDO. An assembled unit designed to retard and stabilize the trajectory of a torpedo in flight prior to water entry.*

STABILIZER, VERTICAL. A fixed vertical airfoil forming a part of the main directional control surfaces, perpendicular or approximately perpendicular to the longitudinal axis of the aircraft. The functional purpose of the vertical stabilizer is to maintain uniformity of motion in relation to the longitudinal axis in flight.*

stabilizing fin. Fin on the tail of some projectiles and bombs that helps to maintain stability during flight so that the projectile or bomb strikes nose first.

stabilizing sleeve. 1. *General.* A tube of fabric attached to an item to provide stabilization of the item as it moves through the air. 2. *Specif.* A cloth tube attached to an aircraft flare to hold it in proper position while it is descending.

stable. Having stability (which see).

stable element. *Specif.* Any instrument or device, such as a gyroscope, used to stabilize a radar antenna, turret, or other piece of equipment mounted on an aircraft or ship.

stable oscillation. See: oscillation, stable.

stable detonation velocity. See: detonation.

stab primer. See: DETONATOR, STAB.

stack arms. To put a number of rifles in a group, upright, with their butts on the ground. Three of them are linked together with the stacking swivels. Additional rifles are stacked leaning against this group.

stacked charge. See: charge, stacked.

stacking swivel. Hinged hook on the muzzle end of the handguard of a rifle by means of which several rifles can be fastened together to form a stack.

stadia scale. *Optics.* Graduations on a reticle which in conjunction with a rod of definite length can be used to measure distances.

STAFF, TARGET MARKING. An item designed for the hoisting and lowering of signaling disk(s) used in connection with target marking. It is generally made of wood and usually of a rectangular shape, having a slot in either one or both ends with holes drilled transversely to the slot.*

stage. 1. *General.* One of the successive steps or periods in an action, motion, or process; likewise, the whole of an action, motion, or process when being distinguished from one that has successive steps, as in 'a single-stage reaction.' 2. *Specif.* A period in a rocket's flight resulting from the propulsive force of

one or other of its charges, as in 'two-stage rocket.' 3. A step in the movement of fluid through a compressor that uses more than one impeller. 4. In electronics, that portion of a circuit contained between the control grid of one tube and the control grid of the next adjacent tube.

stagnation point. A point at which moving fluid comes entirely to rest.

stagnation pressure. See: pressure, stagnation.

stagnation temperature. See: temperature, stagnation.

stake. To deform metal of two mating parts screwed together, by centerpunch or other means, so the parts cannot turn in relation to each other.

STAKE, VEHICLE BODY. A wood and/or metal post like item designed to be inserted in the stake pocket of a vehicle body to prevent the loss of cargo. It may have fittings or provisions for attaching lattice type cross pieces, panel(s), chain(s), rope(s), and the like.*

stall. 1. The action or behavior of an airplane (or one of its airfoils) when by the separation of the airflow, as in the case of insufficient airspeed or of an excessive angle of attack, the airplane or airfoil tends to drop; the condition existing during this behavior. 2. A flight performance in which an airplane is made to lose flying speed and to drop by pointing the nose steeply upward. 3. An act or instance of stalling. 4. Burbling, i.e., the action of airflow separation that results in a stall (sense 1). *Loose usage.*

In sense 1, the stall results from a reduction in circulation, and the airfoil changes in character from a streamlined body to a blunt body. This may occur at very low speeds or at very high speeds where turbulent separation occurs.

standard. (std) Standard type. See: type classification.

Standard Atmosphere. Since the resistance of the air to a projectile depends upon the wind, the density and the temperature, it is convenient to assume, as a point of departure in computing firing tables, a wind, density and temperature structure for this purpose. A sort of average or representative air structure so derived is called 'a standard atmosphere.' The standard atmosphere for the United States Armed Services is the *U. S. Standard Atmosphere* which is that of the International Civil Aviation Organization (ICAO). This standard atmosphere assumes a ground pressure of 760 millimeters of mercury and a ground temperature of 15°C.

The temperature throughout the troposphere, that is, the region where turbulent mixing takes place, extending up to 11 kilometers is given by the formula

$$\text{absolute temperature } T \text{ (}^\circ\text{K)} = 288.16 - 6.5 H$$
 where H is the height above sea level measured in kilometers. In the stratosphere, extending from 11 kilometers to 25 kilometers, the temperature is assumed to be a constant 216.66°K. Above the stratosphere other laws are assumed.

Although the ICAO atmosphere makes no assumptions about wind structure, for firing table purposes, it is assumed that there is no wind.

standard ballistic conditions. Set of ballistic conditions arbitrarily assumed as standard for the computation of firing tables. See: Standard Atmosphere.

standard deviation. In the field of testing, a measure of the deviation of the individual values of a series from their mean value.

The standard deviation is expressed algebraically by the formula

$$\sqrt{\frac{\sum x^2}{N}}$$

where Σ (sigma) means the sum of, x equals the deviation from the mean, and N equals the number of scores or individuals in the distribution. For example, let us assume a distribution of 5, with scores of 2, 4, 6, 8, and 10. The mean of these scores is 6, the deviations -4, -2, 0, +2, and +4. Each squared gives 16, 4, 0, 4, and 16. The sum of these is 40, which divided by 5 makes 8. The square root of 8 is 2.82. This is the standard deviation.

Other methods of arriving at the standard deviation are used, but they go back to the formula shown.

standard error. The square root of the average of the squares of all the errors.

standard inspection procedure. Instructions furnished to a procurement inspector for guidance in determining acceptability of supplies.

standard magazine. Building used to store ammunition and explosives and constructed in accordance with prescribed specifications.

standard microphone. *Electroacoustics.* A microphone the response of which is accurately known for the condition under which it is to be used.

standard muzzle velocity. Velocity at which a given projectile is supposed to leave the muzzle of a gun. The velocity is calculated on the basis of the particular gun, the propelling charge used, and the type of projectile fired from the gun. Firing tables are based on standard muzzle velocity. Also sometimes called 'prescribed muzzle velocity.'

standard nomenclature. Uniform designation of items of materiel in which designating noun or phrase is given first, followed by the modifiers in reverse of the normal conversational order. Published in Supply Manuals. See: nomenclature.

Names and descriptions of items are now controlled and made uniform for all services through Cataloging Handbooks published by the Cataloging Division of the OASD (Supply and Logistics).

standard pack. Quantity of items usually packed in one container for shipment.

standard package. See: standard pack.

standard pitch. *Electroacoustics.* Pitch based on the tone 'A' of 440 cycles per second.

With this standard, the frequency of middle C is 261.6 cycles per second. Musical instruments are to be capable of complying with this standard when played where the ambient temperature is 22°C (72°F).

standard trajectory. Path through the air that it is calculated a projectile will follow under given conditions of weather, position, and materiel, including

- the particular fuze, projectile, and propelling charge that are used. Firing tables are based on standard trajectories. See also: **Standard Atmosphere**.
- standard type.** See: **type classification**.
- standing corrections.** *Gunnery.* Algebraic sum of position and calibration corrections in mils and tenths of seconds.
- standing-on-nines carry.** See: **carry**.
- standing operating procedure.** (SOP) 1. A fixed and approved method or procedure for accomplishing something. 2. A set of instructions setting forth the method for doing something or carrying out an operation, prescribed for those operations, tasks, or features thereof that lend themselves to a standardized procedure.
- standing waves.** See: **waves, standing**.
- standoff.** As pertains to shaped charge ammunition: The distance or spacing between the base of the liner and the target at the time of initiation. The 'built-in' standoff is represented by the spacing between the base of the liner and the impact surface of the tip of the projectile. 'Free space' is represented by the same distance at the time of functioning, allowing for the crush-up of the nose. 'Air space' is used to refer to this same spacing in underwater weapons.
- star.** Pyrotechnic signal that burns as a single light.
- star gage.** An instrument for measuring bore diameters, consisting of a long rod, having a micrometer handle, and a head fitted to receive adjustable radial steel points.
- star grain.** A solid rocket propellant configuration with an internal star-shaped characteristic cross section.
- star shell.** See: **projectile, illuminating**.
- STARTER, CLOCK, UNDERWATER MINE.** A hydrostatically operated device designed to prevent the premature operation of a clock delay mechanism in an underwater mine.*
- STARTER, ENGINE, ELECTRICAL.** An item consisting of an electric motor and integral and associated components primarily designed to crank an internal combustion engine until it starts operating under its own power. May include facilities for manual and/or mechanical actuation.*
- STARTER, ENGINE, GASOLINE.** An item consisting of a gasoline engine and integral and associated components primarily designed to crank an internal combustion engine until it starts operating under its own power. It may include facilities for manual and/or mechanical actuation.*
- STARTER, FIRE.** An item containing flammable material, designed to start fires under adverse weather conditions where ordinary ignition methods would fail.*
- STARTER, TIMER-PROGRAMMER, GUIDED MISSILE.** A specifically designed item consisting of a solenoid and switches that start the operation of a timer and programmer unit.*
- starting mix.** In pyrotechnic devices, an easily ignited mixture which transmits flame from an initiating device to a less readily ignitable composition.
- STARTING MIXTURE, GUIDED MISSILE.** A pre-mixed item of liquid explosive material designed for initial combustion chamber warm-up through hypergolic reaction with missile contained oxidizers. This item is used prior to the cut-in of certain primary propellant mixtures in guided missiles.* See also: **hypergolic propellant**.
- starting motor.** See: **STARTER, ENGINE, ELECTRICAL.***
- static balanced surface.** See: **balanced surface, static**.
- static firing.** The firing of a rocket motor or rocket engine in a hold-down position to measure thrust and accomplish other tests.
- static gearing ratio.** The ratio of the control-surface deflection in degrees to angular displacement of the missile which caused the deflection of the control surface.
- static temperature.** See: **temperature, static**.
- static testing.** The testing of a device in a stationary or held-down position as a means of testing and measuring its dynamic reactions. Said esp. of a rocket motor as a means of measuring thrust.
- static weapon.** A weapon which is used in place, e.g., a chemical cylinder, that is used to release chemical agents from the point where it is located.
- station.** 1. General term meaning any military or naval activity at a fixed land location. 2. A separate transmitter or receiver or a combination of transmitters and receivers including the accessory equipment required for carrying on a definite radio communication service. The station assumes the classification of the service in which it operates permanently or temporarily.
- station stock level.** Maximum quantity of supplies expressed in days of supply, permitted to be on hand or due in at any time at a military installation. This level is based on actual past issues and anticipated demands. It represents the requisitioning objective.
- stator.** The portion of an electrical rotating machine which contains the stationary parts of the magnetic circuit with their associated windings, or permanent magnets. May include housing or frame.*
- statoscope.** An instrument, usually containing a highly-sensitive aneroid barometer, for detecting slight changes in the altitude of an aircraft.
- tay time.** In rocket engine usage the average value of the time spent by each gas molecule or atom within the chamber volume.
- std (abbr).** 1. 'Standing.' 2. 'Standard.'
- steady state.** The condition of a system which is essentially constant after damping out initial transients or fluctuations.
- STEEL ARMOR PLATE.** A ferrous product of solid rectangular cross section, uniform throughout. Made to specific strengths for the specific purpose of arresting fire arm projectiles or fragments.*

- steel case.** In cartridge nomenclature, indicates that the cartridge case is made of steel.
- steel jacket.** In small arms ammunition nomenclature, indicates that the bullet has a steel jacket.
- steering brake.** Means of turning, stopping, or holding a tracked vehicle by braking the tracks individually.
- stellar guidance.** See: navigation, celestial.
- stepped-thread (Welin) breechblock.** See: breechblock, stepped-thread (Welin).
- step rocket.** See: multistage rocket.
- stereoscope.** An optical instrument with two eyepieces designed to assist an observer in combining the images of two nearly identical pictures in order to obtain an effect of solidity or depth.*
- stereoscopic contact.** A term applied to the action of bringing the target into the same apparent distance plane as the central measuring mark of the reticle in the use of a stereoscopic height finder.
- stereoscopic power.** The gain in stereoscopic effect afforded by a magnifying binocular instrument as compared with the ability of the naked eye. This power will vary with the separation of the objectives and the power of the instrument.
- stereoscopic range finder.** Telescopic instrument that gives correct ranges when the object sighted on appears at the same distance or depth as an image or cross hair marked on its lens; stereo range finder; stereoscopic height finder.
- stereoscopic trainer.** Stereoscope used to train and test observers in the use of a stereoscope. Its lenses are marked off with a scale by which ability of the observer can be checked.
- stereoscopic vision.** Vision in depth or three dimensions due to the spacing of the eyes. This spacing of the eyes permits them to see objects from slightly different angles. They get a better impression of the shape, depth, and position of an object with relation to other objects.
- sterilizer.** Device incorporated in a munition to detonate or make inactive at a desired time.
- STERILIZER, UNDERWATER MINE.** An electrolytic device designed to limit the armed life of an underwater mine by shorting the batteries, flooding, or exploding the underwater mine.*
- stgt (abbr).** 'Secondary target.'
- stick.** 1. A number of aerial bombs released from an aircraft so as to fall or strike in train. When the bombs are stacked one above the other inside the aircraft, they are ordinarily released simultaneously in close train. 2. A number of paratroopers jumping singly and in succession in one pass over the drop zone. 3. A number of aerial mines, flares, or the like released singly and in succession. 4. A series of rounds fired in an automatic firearm or gun in one burst.
- sticky charge.** See: charge, sticky.
- sting.** A rod or type of mounting attached to, and extending backward from, a model, for convenience of mounting when testing in a wind tunnel.
- stinger.** A tail gun or tail-gun emplacement in an airplane. *Slang.*
- stk (abbr).** 'Stock.'
- St. Louis Ordnance District.** One of the eleven districts into which the United States is divided for purposes of industrial mobilization, procurement, contract negotiation and administration, etc., by the Ordnance Corps. Embraces the States of Colorado, Kansas, Nebraska, Missouri, Arkansas, and Oklahoma; all of the State of Texas, except the counties of El Paso, Hudspeth, Culberson, Jeff Davis, Presidio and Brewster; and the counties of Adams, Schuyler, Cass, Morgan, Macoupin, Montgomery, Christian, Shelby, Cumberland, Jasper, and Crawford, and all counties south of these in the State of Illinois. The main office is located in St. Louis, Missouri.
- St. Louis Ordnance Plant.** Ordnance Corps field installation, located at St. Louis, Missouri.
- stochastic method.** Method of analyzing data, such as results of tests, employing statistical operations.
- stock.** (stk) 1. A store or supply on hand of materiel, equipment, or other supplies. 2. The wooden part of a firearm, esp. of a shoulder arm.
- stock accounting.** The establishment and maintenance of formal records of materiel in stock reflecting such information as quantities, values, condition, or other information as required.
- stock control.** Process by which, through a system of records and reports, pertinent data are maintained on the quantity, location, and condition of supplies and equipment due-in, on hand, and due-out. The function of stock control is to determine the quantities of supplies and equipment available for issue and to maintain exact records of the locations of those items. The objective of stock control is the management of supply operations so that distribution can be effected with a minimum amount of supplies and equipment in the distribution system.
- stock level for the technical service.** Quantities of supplies necessary to be on hand ready for issue to meet unpredictable fluctuations in issues, unforeseen special supply conditions, and interruption of receipts. The stock level is an objective quantity around which actual stock on hand ready for issue fluctuates. See: theater stock level.
- stock number.** Number assigned by a technical service to an item, principally to identify that item for storage and issue purposes.
- stockpile.** A reserve stock of materiel, equipment, raw material, or other supplies; *specif.*, a stock of an important or critical product or article stored for use in time of emergency.
- stock record account.** Record kept by an accountable officer listing all property on hand, received, and issued.
- stoichiometric.** Relating to components (of a fuel) involved in a burning process which are present in exactly the quantities needed for reaction, without an excess of any component.

stop. Device on a mechanism, especially on guns such as the automatic pistol, that checks the action of a moving part or that acts as a lock to prevent it from moving.

STOP, ANTENNA. An item designed to check the movement or action of an antenna.* Do not use if a more specific item name is available.

stoppage. (stp) A jam in an automatic weapon; the condition of being jammed.

STOPPER, BOTTLE. A closure to fit within the mouth of a bottle. It is made of cork, rubber, glass and glazed ceramics, paper, or plastic.* It has other uses such as closure for practice hand grenade, M21.

stor (abbr). 'Storage.'

storage. (stor) *Electronic computers.* 1. Any device into which information can be introduced and then extracted at a later time. The mechanism or medium in which the information is stored need not form an integral part of a computer. 2. The act of storing information. See also: **memory.**

storage capacity. *Electronic computers.* The maximum number of distinguishable stable states in which a storage device can exist is a measure of its capacity. It is customary to use the logarithm to the base two of that number as a numerical measure of the storage capacity. In this case, the unit of storage capacity is a binary digit.

storage, circulating. A device using a delay line, or unit which stores information in a train or pattern of pulses, where the pattern of pulses issuing at the final end are sensed, amplified, reshaped and reinserted in the delay line at the beginning end.

storage, electrostatic. *Electronic computers.* A device possessing the capability of storing changeable information in the form of charged or uncharged areas on the screen of a cathode-ray tube.

storage, erasable. *Electronic computers.* Media which may hold information that can be changed; i.e., the media can be re-used; e.g., magnetic tape, drum, or core.

storage maintenance. Prevention of deterioration of material or equipment in storage due to all causes except obsolescence.

stp (abbr). 'Stoppage.'

straddle. 1. A mixed salvo (which see). 2. To lay aerial bombs about, but not on, a *target*, some falling short, others long, and others to the sides.

straddle-carry truck. See: **TRUCK, STRADDLE-CARRY.**

strafe. [German 'punish.'] To rake a body of troops or other persons with gunfire or rocket fire at close range and from a flying aircraft; to attack a roadway, railyard, factory, or other installation with bullets, projectiles, or rockets fired from a low-firing airplane. Cf: **rake.**

STRAIGHTENER, MOTOR VEHICLE AXLE AND HOUSING. A device whose basic assembly is primarily designed for holding axles, axle housings, and drive shaft housings between adjustable centers while being brought into the desired degree of align-

ment by the application of pressure supplied by a hand jack. It may also be used to perform other functions such as removing and replacing sleeves in housings or removing gears from shafts.*

STRAIGHTENER, MOTOR VEHICLE FRAME. A group of related components used in the detection and correction of distortion in motor vehicle frames.*

strain. *Mechanics.* Deformation or change in dimension or shape produced by the action of **stress.**

strain gage. See: **gage, strain.**

strapping. 1. An operation by which supply containers, such as cartons or boxes, are reinforced by metal straps, bands, or wire placed at specified intervals around them, drawn taut and then sealed or clamped by a machine. 2. Measurement of the circumference and height of storage tanks to determine in bulk liquid storage capacity.

STRAP, SAFETY, INDUSTRIAL. A strip of leather or webbing with a buckle and two snap hooks designed to be used with a safety belt by workmen, such as linemen, firemen, forestry workers and the like, to afford support and protection against falling.*

strat (abbr). 'Strategic.'

strategic. (strat) 1. Of raw materials: Needed for the industrial support of a war effort. 2. Of or pertaining to military measures or actions taken against the enemy's war-making capacity.

strategic material. A material needed for the industrial support of a war effort. Cf: **critical material.**

strategic missile. (SM) Specifically, a missile designed for use in strategic attack.

strategic mobility. The capability of a unit, command, force, or thing that enables it to be readily moved in advance of engagement with hostile forces.

Antiaircraft artillery has strategic mobility, but it does not have tactical mobility. Cf: **tactical mobility.**

strategic target. Any installation, network, group of buildings, or the like, considered vital to a country's war-making capacity and singled out for attack.

Strategic targets include factories, stockpiles, power systems, etc. See: **strategic, sense 2.**

strato (abbr). 'Stratosphere.'

stratosphere. (strato) 1. An upper stratum of the earth's atmosphere lying immediately above the troposphere and, as treated by some meteorologists, immediately below the chemosphere, and characterized by horizontal and predominantly westerly air movements, a more or less constant temperature, and an absence of clouds. 2. Also applied to a thicker stratum extending from the troposphere through the chemosphere.

In the concept of sense 1, the stratosphere extends from above 11 kilometers to 32 kilometers (from above 7 miles to 19 miles) and is sometimes called the 'isothermal region'; in the concept of sense 2, it extends to about 80 kilometers (50 miles).

streamline. 1. To give a smooth contour to an object, such as an airplane or bomb, so as to decrease air resistance. 2. To force a control surface into its neutral position, as in 'the airflow streamlined the

- rudder.' 3. A shape or contour that decreases air resistance. 4. *Technical*. The path followed by the particles of a fluid about a solid body when the fluid is moving about it. Commonly applied to a non-eddying flow of fluid.
- streamline form.** See: form, streamline.
- stream tube.** In fluid flow, an imaginary tube whose wall is generated by streamlines passing through a closed curve.
- stress.** *Mechanics*. 1. A condition existent in a body when its internal structure or surfaces resist a force that produces or tends to produce deformation in the body; molecular resistance to change in shape or size. 2. A force that produces, or tends to produce, deformation in a body, measured by the force applied per unit area. Cf: strain.
- stress, circumferential.** When a hollow cylinder, such as a gun tube, is subjected to internal pressure, or external pressure, or a combination of the two, the metal of the cylinder walls is subjected to stresses which, for any elementary cube of metal, may be resolved into three resultant stresses acting at right angles. These are:—*radial stress, longitudinal stress, and tangential or circumferential stress*, according to the direction in which acting. A stress may be either tension or compression and is usually expressed per unit area, as pounds per square inch.
- stress, longitudinal.** See: stress, circumferential.
- stress, radial.** See: stress, circumferential.
- stress raiser.** A feature of a part subjected to load which causes the stress to be higher at some point, or in an area, than it is at points near, or in areas near thereto. Thus a groove or notch with sharp corners causes the stress to be high in the corners, and failure may be expected to originate there.
- stress, tangential.** See: stress, circumferential.
- strike.** Concerted air attack on a single objective.
- striker.** A PIN, FIRING or a projection on the hammer of a firearm, which strikes the primer to initiate a propelling charge explosive train or a fuze explosive train. See: explosive train.
- striker plate.** A plate in the breech of a firearm or gun, which supports the base of the cartridge and which is pierced with a hole through which the striker or firing pin hits the primer.
- striking velocity.** Impact velocity (which see).
- string.** Given number of shots fired within a certain time interval.
- stringer.** *Aeronautical*. An auxiliary longitudinal member of the structural framework of a fuselage, nacelle, empennage boom, etc., designed to stiffen and/or support the outer covering of skin by attachment to bulkheads and/or formers.* Cf: longeron.
- strip.** To disassemble a piece of equipment, such as a gun, in order to clean, repair, or transport it. See: detail-strip; field-strip.
- strippable filming.** Preparation of materiel for storage in a plastic water vapor barrier. The barrier is applied by air spray gun and may be removed readily by stripping off. The interior of the barrier is desiccated to maintain low relative humidity.
- stripped center of impact.** Center of the zone that would have been covered by a series of shots if no allowance had been made for adjustment correction or human error.
- stripped deviation.** Distance by which a shot would have missed the target if there had been no adjustment correction or human error.
- stripping.** Process of eliminating from firing data the corrections which had been applied and errors which had occurred in firing. Used in the analysis of any firing to determine the actual performance of any weapon with any particular lot of ammunition, and to determine distances and direction from accurate plotting on firing charts.
- stripping of rifling.** Wearing off or 'peeling' off of the lands in the bore of a gun.
- STROBOSCOPE.** A device specifically designed for observing a periodic or varying motion such as rotation or vibration, by creating the optical illusion of slowing down or stopping the motion of an object being viewed.*
- stroke.** 1. The movement of a piston in a reciprocating engine between its dead center positions; the distance of this movement. 2. *Cartridge actuated devices*. The design distance for piston motion in a thruster or the sum of the motions of the tubes in a multitube CAD (up to the point where the system opens, if applicable).
- strong point.** A strongly fortified and heavily armed point in a defense system, usually supported by auxiliary armed positions.
- structurally dual networks.** *Network topology*. A pair of networks of such a nature that their branches can be marked in one-to-one correspondence so that any mesh of one corresponds to a cut-set of the other. Each network of such a pair is said to be the dual of the other.
- structurally symmetrical network.** *Network topology*. A network which can be arranged so that a cut through the network produces two pairs that are mirror images of each other.
- structure.** *Specif*. The construction or make-up of an airplane or missile, including that of the fuselage, wings, empennage, nacelles, and landing gear, but not including that of the power plant, furnishings, equipment, tanks, lines, etc. See: airframe.
- strut.** 1. Part of the lock mechanism in automatic pistols and revolvers that puts pressure on the hammer. 2. Brace or supporting piece, especially in an aircraft and an artillery piece.
- STYLUS, SOUND RECORDING.** An item specifically designed to inscribe a mechanical recording medium such as a disk, cylinder, film or belt for the purpose of registering sonic variations.*
- STYLUS, SOUND REPRODUCING.** An item specifically designed to follow the grooves in a mechanically recorded medium such as a belt, cylinder, disk or film for the purpose of converting the groove variations into mechanical movement.*

SUPPLEMENTARY EQUIPMENT, MAINTENANCE COMPANY. A group of items consisting of brake band lining, oil and grease, V-belts, inner-tube repair kits, nuts and bolts, etc., for use with shop sets. It contains a large variety of expendable items and some special tools.*

sub (*abbr.*). 1. 'Submarine.' (Pronounced as a word.) 2. 'Substitute.' 3. 'Subordinate.'

subaqueous ranging. Detecting and locating invisible marine targets, such as enemy vessels at night, or enemy submarines, by means of sound detectors placed below the surface of the water. These instruments pick up sound vibrations and automatically register the distance and direction from which they come.

subassembly. A required assembly of a number of parts (not an end item or treated as an end item) which in turn is assembled as a unit into a larger assembly. A subassembly may be part of another subassembly.

subcaliber. A caliber smaller than standard for the gun on which practice is being given.

subcaliber aircraft rocket. (SCAR) See: rocket, sub-caliber aircraft.

subcaliber ammunition. Ammunition used with a gun or launching tube, usually in practice firing, of a smaller caliber than that which is standard for the weapon used. Subcaliber ammunition is adapted for firing in weapons of larger caliber by subcaliber tubes, interchangeable barrels, sabots, or other devices.

subcaliber equipment. Items of equipment, such as small guns, adapters, tubes, and accessories, used for firing subcaliber ammunition in practice drills with larger guns.

subcaliber firing. Practice firing of subcaliber ammunition, in connection with drills in elevating, traversing, or aiming guns of larger caliber.

subcaliber gun. Gun mounted on the outside and above the tube of a larger gun. It is used in practice firing of subcaliber ammunition, in connection with aiming drills with the larger gun.

subcaliber mount. Special mount in or on the tube of a gun, upon which a gun of smaller caliber can be attached for practice firing.

subcaliber range. Firing range that is used for practice firing with subcaliber ammunition. Since subcaliber ammunition cannot be used for long distances, a subcaliber range may be equipped with landscape targets and other devices which offer problems similar to those of normal fire.

subcaliber tube. See: TUBE, SUBCALIBER, CAN-NON.

subcarrier frequency. See: frequency, subcarrier.

subcontract. A contract made with a third party by one who has contracted to perform work or service, for whole or part performance of that work or service.

subcontractor. Any contractor who assists a prime contractor (which see) in fulfilling a contract. In some special contexts, also called a 'contractor.'

subdepot. A subsidiary depot operating under the jurisdiction of, and performing functions specified by, another depot.

submachine gun. (SMG) A type of machine gun (which see). A short-barreled shoulder firearm using pistol-type ammunition and capable of full-automatic fire. Sometimes called a machine pistol (which see).

submissile. One of several smaller missiles carried and released by a larger missile, especially in a warhead.

subroutine. *Electronic computers.* The set of instructions necessary to direct the computer to carry out a well defined mathematical or logical operation; a subunit of a routine. A subroutine is often written in relative or symbolic coding even when the routine to which it belongs is not.

subsatellite. An object designed to be carried into orbit inside an artificial earth satellite but later ejected to serve a particular purpose. Example: an inflatable subsatellite to measure air density and drag.

subsonic. 1. *Aerodynamics.* Of or pertaining to subsonic speed (which see). 2. *Acoustics.* Of or pertaining to frequencies below audible frequencies. Cf: supersonic.

subsonic speed. A speed relative to surrounding fluid less than that of the speed of sound in the same fluid. See: speed of sound.

substitute standard type. See: type classification.

SUM (*abbr.*). 'Surface-to-underwater missile.'

summit of trajectory. Highest point that a projectile reaches in its flight.

Sunflower Ordnance Works. Ordnance Corps field installation, located at Lawrence, Kansas.

super bazooka. See: bazooka.

supercharge. 1. Propelling charge intended to give the highest standard muzzle velocity, authorized for the projectile in the weapon for which intended. The term 'supercharge' is sometimes used as an identifying designation when more than one type of propelling charge is available for a weapon. 2. To force air or a fuel-air mixture into an engine by means of a supercharger. 3. To equip an engine or aircraft with a supercharger.

supercharger. A pump or compressor for forcing more air or fuel-air mixture into an internal combustion, reciprocating engine than it would normally induct at the prevailing atmospheric pressure.

supercharger, vane type. A kind of supercharger that has a rotor located eccentrically in a casing, with vanes attached to the rotor that slide back and forth to accommodate to the walls of the casing, the vanes catching the air at the inlet on one side of the rotor, then forcing the air around to the other side toward the outlet.

superelevation. An added positive angle in anti-aircraft gunnery that compensates for the fall of the projectile during the time of flight due to the pull of gravity; the angle the gun or launcher must be elevated above the gun-target line.

superhigh frequency. (SHF) See: frequency, electronic.

superquick fuze. See: fuze, superquick.

supersensitive fuze. See: fuze, supersensitive.

supersonic. 1. *Aerodynamics.* Of or pertaining to supersonic speed. 2. *Acoustics.* Ultrasonic. (Use in this sense is not recommended.) See: ultrasonic.

Examples of uses in sense 1: *supersonic missile*, a missile designed to travel, or that actually travels, at supersonic speed; *supersonic wind tunnel*, a wind tunnel in which the wind travels at supersonic speed relative to an object fixed within the tunnel. Cf: hypersonic; subsonic.

supersonics. 1. That branch of aerodynamics that treats of supersonic speeds or velocities. 2. Ultrasonics. (Use in this sense not recommended.)

supersonic speed. A speed relative to surrounding fluid greater than that of the speed of sound. See: speed of sound.

supp (*abbr.*). 'Support.'

suppl (*abbr.*). 'Supplementary.'

supplementary charge. See: charge, supplementary.

supply economy. The practice of conservation of material by every individual in the Armed Forces. It includes conservation, maintenance, safeguarding, recovery, repair and salvage of food, fuel, clothing, weapons, transport, and all other material.

support. 1. Aid, assistance, protection, or cooperation provided one element, unit, force, activity, or the like by another, to the end of achieving either a common objective or one not in conflict with the objectives of the supporting element. 2. The element, unit, etc., that provides aid, assistance, or cooperation, as in 'our support arrived at the rendezvous at the right moment.' 3. The role of supporting, as in 'this group was in support of the advanced ground unit.'

SUPPORT, DETONATOR CABLE COILS. A support designed to hold two or more detonator cable coils in position to form a detonator cable coil assembly.*

SUPPORT, GUIDED MISSILE. A specifically designed item used to support a guided missile in its launching position on a LAUNCHER, PLATFORM, GUIDED MISSILE.*

supporting weapon. Any weapon used to assist or protect a unit of which it is not an organic part.

SUPPORT, RETRACTABLE, SEMITRAILER. An assembly usually having two adjustable legs with wheels or shoes at their ends, designed to support the front of a semitrailer when disengaged from the towing vehicle or dolly. Excludes support and leveling jacks.*

support roller. A roller wheel used to hold up and car-

ry the upper portion of the track to the idler or driving sprocket.

SUPPORT, TANK COMMANDER'S CUPOLA COVER. A metal support of various shapes and cross sections designed to frame and/or hold in position a COVER, TANK COMMANDER'S CUPOLA.*

surface, aerodynamic balanced. See: balanced surface, aerodynamic.

surface burst, atomic. See: atomic surface burst.

surface plate. A plate having a very accurate plane surface used for testing other surfaces or to provide a true surface for accurately locating testing fixtures. It is usually mounted on three adjustable legs so that it can be accurately leveled in a horizontal plane.

surface roughness finishes. A system by which the acceptable deviation from a plane of the surfaces of a manufactured part can be numerically specified, based upon the average height of the 'peaks and valleys' on the surface. In Ordnance Corps practice, acceptability is determined by comparison of appearance and 'feel' with calibrated 'Ordnance Surface Roughness Specimens,' or by the use of a profilometer.

The control of surface quality applies equally to internal and external cylindrical surfaces, the faces of gear teeth, etc. The same conception of average height of imperfections applies, based upon the selection of a suitable reference line.

surface, static balanced. See: balanced surface, static.

surface zero. See: ground zero.

surge. A transient and abnormal rush in power or energy, as occurs in an electrical or electronic apparatus or in an engine.

surveillance. 1. Observation, inspection, investigation, test, study, and classification of ammunition, ammunition components, and explosives in movement, storage, and use with respect to degree of serviceability and rate of deterioration. 2. Continuous observation of an area or of fire.

surveillance radar. An anti-aircraft artillery radar with the normal functions of maintaining a continuous air watch over an area of land or water of primary significance to the anti-aircraft defenses, and supplying to the anti-aircraft artillery defense information on all aerial targets with sufficient accuracy to localize them to a degree that will permit transference to other more accurate radars of the anti-aircraft defenses and at a sufficiently long range to enable the outermost firing elements to engage the targets at maximum range.

surveillance test, 65.5°C. See: heat tests.

SURVEYING SET, ARTILLERY FIRE CONTROL. A collection of instruments and equipment such as protractors, slide rule, measuring tape and the like. Used in third order and fourth order surveying for artillery fire control.*

survival probability. The chance that a target will survive a given operation.

survival weapon. See: RIFLE-SHOTGUN, SURVIVAL.

suspension. Mechanical linkage which provides sprung or flexible support between the ground contacting members of a vehicle and the chassis or hull.

SUSPENSION BAND, TORPEDO. A metallic item designed to be clamped around a torpedo to provide a means of suspension when mounted on an aircraft.*

SUSPENSION BAND, UNDERWATER MINE. A metallic item designed to be clamped around an underwater mine to provide a means of suspension when mounted on an aircraft.*

SUSPENSION BEAM, TORPEDO. A metallic item designed to be bolted to the top of a torpedo to provide a means of suspension when mounted on an aircraft.*

suspension wheels. Wheels on the horizontal volute type suspension system, replacing the bogie wheels on some tanks. Suspension wheels support the weight of the vehicle and roll on the inner side of the track.

sustained rate of fire. Actual rate of fire that a weapon can continue to deliver for an indefinite length of time without seriously overheating.

sustainer. A propulsion system, which travels with, and does not separate from, the missile. Usually applied to a ROCKET MOTOR or ROCKET ENGINE when used as the principal propulsion system as distinguished from an auxiliary system such as the jato unit (which see).

SWAB, SMALL ARMS CLEANING. A piece of fabric, cotton or the like designed for use in the cleaning of small arms weapons.*

SWAC (abbr). 'Special Weapons—Ammunition Command.'

swamp buggy. A wheeled vehicle that runs on land, mud, or through shallow water, used esp. in swamps.

sway brace. A brace that keeps a bomb, fuel tank, or other object from swaying.

SWB (abbr). 'Short wheelbase.'

sweat cooling. A technique for cooling combustion chambers or aerodynamically heated surfaces by forcing a coolant through a porous wall. Film cooling at the interface results. Also called transpiration cooling.

sweep. 1. Swift flight of a formation of combat airplanes over enemy territory. 2. Cover a wide area with gunfire. 3. Trace produced on the screen of a cathode-ray tube by linear deflection of the electron beam; time base; base line. 4. Drag of body of water to find and remove or explode mines. 5. Pass a mine detector over an area to detect any mines that may be contained therein.

sweepback. 1. The backward slant of a wing, horizontal tail, or other airfoil surface; the backward slant of a leading or trailing edge of an airfoil. 2. The amount of this slant, expressed as the angle between a line perpendicular to the plane of symmetry and a reference line in the airfoil.

swell diameter. In a body of revolution having an ogival portion, such as a projectile, the swell diameter

is the diameter of the maximum transverse section of the geometrical ogive. See also: ogive.

sweptback wing. An airplane wing on which both the leading and trailing edges have sweepback, the trailing edge forming an acute angle with the longitudinal axis of the airplane aft of the root.

swinging traverse. Type of fire used against dense troop formations moving toward a machine gun position or rapidly moving targets; the traversing clamp is loosened so that a gunner makes rapid changes by exerting pressure against the pistol-grip.

switch. A device which completes, interrupts, or changes the connections in one or more electrical circuits by manual or mechanical actuation or as a result of changes in ambient temperature. Includes items consisting of individually separable switches which are physically interlocked (e.g., one button returns when the other is pushed), which have a common actuator, or are electrically connected. Excludes items which perform the same function by self-produced thermal action such as relays, circuit breakers, fuses or motor starters.*

SWITCH, ANTICOUNTER MINING. A device designed to prevent an underwater mine from being fired when subjected to a physical shock such as a near-by explosion. It opens the detonator circuit for a short period of time.*

SWITCH, INERTIA. A switch which is specifically designed to be actuated by an abrupt change in velocity of the item upon which it is mounted.*

SWITCHING UNIT, YAW-PITCH, GUIDED MISSILE. An item specifically designed to provide switching facilities to select yaw and pitch signals received from a guided missile for voltage calibration and test purposes.*

SWITCH, MERCURY. A switch in which mercury is used to bridge contacts by manual or mechanical actuation. Do not use if switch is fabricated with toggle or push button actuator. Includes items in which one of the contacts may be moved into the mercury pool by a permanent magnet.*

SWITCH, PRESSURE. A switch which is actuated by changes in pressure of any gas or liquid or by changes in a vacuum acting upon its sensing element. Excludes SWITCH, SENSITIVE.*

SWITCH, PRESSURE-THERMOSTATIC. A switch which is actuated by changes of pressure (vacuum) on any gas or liquid and by changes in ambient temperature. The contacts for the temperature and pressure sensitive elements may be common.*

SWITCH, PULL. A switch which is actuated by a device such as a pull rod or a chain which requires pulling for each action. Excludes SWITCH, SENSITIVE.*

SWITCH, PUSH. A switch which is externally actuated by a device such as a push rod or button, which requires pushing for each action. The action may be momentary with spring (mechanical) return. Includes items consisting of individually separable switches which are physically interlocked (e.g., one

button returns when the other is pushed) which have a common actuator, or are electrically connected.*

SWITCH, ROTARY. A switch actuated by a definite angular rotation of the switch shaft about its axis. For such a switch having definite travel characteristics and mechanical pressure required for actuation, see: **SWITCH, SENSITIVE.***

SWITCH, SENSITIVE. A switch with a quick-acting mechanism designed to be actuated by a highly delicate, small movement having a definite rating of travel and mechanical pressure. Excludes **SWITCH, MERCURY.***

SWITCH, TRIGGER. A switch which is actuated by pulling a trigger. The switching device with trigger action may be a separate unit but is usually mounted or designed to be mounted in a pistol-grip handle.*

swivel. 1. Device on a gun, machine, etc., that allows one part to turn while other parts remain stationary. 2. **Stacking swivel.** 3. Hinged hooks on the underside of the butt stock and on the underside of the forearm of a rifle through which the gun sling loop is passed.

SWIVEL AND LOOP ASSEMBLY, ARMING WIRE A metallic item consisting of two loops mounted on a common axis so as to permit relative rotation between the parts; designed to form part of an **ARMING WIRE ASSEMBLY.***

swivel gun. Gun mounted on a pedestal so that it can be turned from side to side or up and down.

sympathetic detonation. Explosion caused by the transmission of a detonation wave through the air from another explosion.

synchro. [From 'synchronous.'] An electrical device used for the instantaneous electrical transmission or reception of the angular position data of rotating parts. The universal term applied to any of the various synchronous devices as the Selsyn, Autosyn, motor torque generator, mag-slip, and Siemens. Theoretically a synchro device is treated as a salient-pole, bipolar, alternating-current excited synchronous machine. The standard signal and control synchro has a two-pole, single-phase, rotor field and a Y-wound, single-phase, variable-voltage stator. The transmitter of the synchro, whose rotor is geared to, or otherwise linked with, mechanical equipment, is also called a generator, synchro-generator, or Selsyn-generator. The indicator, also called a motor, synchro-motor, or Selsyn motor, has a motor that is free to rotate, and is damped to prevent excessive oscillation before coming into correspondence with the rotor of the transmitter.

SYNCHRO ASSEMBLY. Two or more synchros on a common mounting or mounted on each other. Do not use this name for single synchros mounted with common synchro accessories such as pulleys, gear reduction units, starting mechanisms.*

SYNCHRO, CONTROL TRANSFORMER. A synchro consisting of a stator and rotor inductively coupled. The electrical output of the rotor is dependent upon both the position of the rotor and the electrical input to the stator from a transmitter

synchro or a differential synchro. Does not include variable resistors, goniometers, or variable transformers.*

SYNCHRO, DIFFERENTIAL RECEIVER. A synchro, the rotor of which is free to turn, which will assume a position in accordance with the sum or difference of the electrical angular information received from two transmitter synchros. Does not include variable resistors, goniometers, variable transformers, or items with dials.*

SYNCHRO, DIFFERENTIAL TRANSMITTER. A synchro, the rotor of which is mechanically positioned for modifying electrical angular information received from a transmitter synchro and transmitting to receiver synchro or control transformer synchro electrical information corresponding to the sum or difference of the electrical input angle and its rotor position angle. Does not include variable resistors, goniometers, variable transformers, or items with dials.*

synchronization. 1. Adjustment of two or more instruments, mechanisms, or parts so that they operate simultaneously at the same rate or in harmony. 2. Adjustment of pointers on two instruments so that they show the same reading at any time. 3. Adjustment of a bombsight in relation to the altitude, speed, and drift of an aircraft so that the target appears stationary, centered on the cross hairs.

SYNCHRONIZER, ELECTRICAL. An item which aligns and/or connects two or more electrical signals with respect to time.*

synchronous bombing. Bombing done with certain bombsights, such as the Norden bombsight, in which the travel of the telescope, focused upon the target, is synchronized with the groundspeed of the airplane, and the course flown is determined by manual adjustment of the bombsight, the two together determining the dropping angle and correcting for drift so that the release occurs at the right instant.

synchronous radar bombing. A kind of radar bombing in which special airborne radar equipment containing rate and steering mechanisms is used to control the direction of flight of the bombing aircraft, solve the bombing problem, and automatically drop bombs at the proper release point.

The radar equipment used in synchronous radar bombing is an independent unit, i.e., it is not used in conjunction with an optical bombsight.

SYNCHRO, RECEIVER. A synchro consisting of a stator and rotor inductively coupled. The rotor is free to turn in accordance with the electrical input from a transmitter synchro or a differential synchro. Does not include variable resistors, goniometers, variable transformers or items with dials.*

synchroscope. 1. Device for checking the timing of the distributor on a gasoline engine. 2. A precision oscilloscope on which recurrent pulses or wave forms may be observed, which incorporates a sweep generator producing one sweep for each pulse regardless of frequency, thus allowing no more than one cycle to be viewed.

SYNCHRO, TRANSMITTER. A synchro consisting of a stator and rotor inductively coupled. The electrical output of the stator into a receiver synchro, a control transformer or differential synchro is dependent upon the position of its rotor. Does not include variable resistors, goniometers, variable transformer, or items with dials.*

systematic error. Repeated error due to faulty adjustment of an instrument or to a defect in it. Systematic errors are those which remain the same, while accidental errors, due to mechanical or other variation, change from one time to the next. Also called instrumental error. See: center of burst error.

system reliability. The probability that a system will

perform its specified task under stated tactical and environmental conditions. This will include accuracy. See: reliability.

systems engineering. An engineering approach which organizes men, materials, and technologies for the purpose of developing an optimum device.

Systems engineering covers both technical and administrative coordination. The technical aspect deals with the compatibility of the physical components of a weapons system, to insure that each component fits physically, dynamically, and functionally with other components of the system. The administrative function deals with the problems of manpower utilization, procurement, scheduling, cost control, reporting, etc.

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T (*abbr.*). 1. In such usage as T61, designates an experimental type item. For new designations, present Ordnance Corps practice is to use the prefix 'X' followed by 'M' and a number. When the item is standardized the 'X' is dropped. See also: **X**. 2. Chemical agent, 'T.'

-T (*abbr.*). 'With tracer' (in combinations only).

Table of Distances. See: **American Table of Distances; quantity-distance tables.**

tab, trim. *Aeronautical.* An auxiliary airfoil usually attached to the rear of a control surface, the function of which is to trim the aircraft and/or reduce the control force.*

tabun. (GA) One of the G-agents or nerve gases. A war gas. Ethyl phosphorodimethylamidocyanide. See also: **chemical agent; nerve gas.**

TAC (*abbr.*). 'Tactical Air Command.'

tac (*abbr.*). 1. 'Tactics.' 2. 'Tactical.' 3. 'Tachometer.'

tachometer. An instrument for measuring lineal and/or rotational speeds in units for a specified elapsed time. Excludes **SPEEDOMETER**.*

tactical (*tac*) 1. Of or pertaining to tactics, i.e., to the arranging, positioning, or maneuvering of forces in contact, or near contact with the enemy so as to achieve an objective or objectives in a campaign, or battle. Applied in this inherent sense to any combat or battle situation, whether in the air or on the surface, as in 'the tactical reason for moving troops against that sector was to force the enemy to weaken his flanks,' or 'the achievement of air superiority involved the tactical capabilities of the aircraft, those of range, speed, and rate of climb.' 2. Often used in sense 1 to distinguish between 'tactical' and 'strategic' considerations. 3. Of or pertaining to combat operations, as distinguished from administrative, technical, or logistical operations. 4. Restrictively, applied to activities of surface battle-line areas only.

tactical control radar. Antiaircraft artillery radar of essentially the same inherent capabilities as the target acquisition radar (physically it may be the same type set) but whose function is chiefly that of providing tactical information for the control of elements of the antiaircraft artillery defenses in battle.

tactical fire control. The manner in which fire power is employed with regard to selection of targets, opening, suspending, or ceasing fire, and classes of fire.

tactical missile. (TM) A missile for use in tactical operations.

tactical mobility. The capability of a unit, command, task force, or the like that enables it to be readily moved while engaged in combat.

An airplane, tank, or naval destroyer each has tactical mobility. Cf: **strategic mobility.**

tactical target. Any physical object, person, group of persons, or position singled out for attack during the course of battle or tactical operations in order to reduce, or to destroy, the enemy's ability to sustain his combat operation.

tactical vehicle. Any vehicle designed for field requirements in combat and tactical operations, or for training personnel for such operations. See: **vehicle**, sense 2 b.

tactics. (*tac*) That branch of the military art or science that treats of positioning, arranging, and maneuvering of forces in combat or in a battle area; i.e., the art or science of using equipment and weapons, or using military persons or units, or using positive action or passivity—all with the purpose of achieving in a combat situation some immediate advantage or of ameliorating a disadvantage with the force or forces at hand.

tail. 1. The rearmost part or section of a bomb, guided missile or the like. 2. Indicates, in fuze nomenclature, that the fuze is to be used in the tail of the munition for which it is intended, and in the case of a fuze component, that the component is part of a tail fuze.

tail assembly. 1. The assembly of fins and/or vanes of a missile that is provided directional stability or guidance. For assemblies having fixed surfaces only, the term **fin assembly** (which see) is preferred. 2. The empennage of an aircraft.

TAIL ASSEMBLY, PROJECTOR CHARGE. An assembly consisting of a steel tube, designed to be attached to a projector charge and to fit over the projector spigot. The forward end of the tube carries a propelling charge, and stabilizing surfaces are attached to the rear end.

tail fuze. See: **fuze, tail.**

tail, grab. A device employed to secure a missile to its launcher by 'grabbing' or holding the missile tail section strong points to prevent missile motion until the desired thrust level is reached. Release is accomplished at the instant of launch. Also called **missile retainer.**

tailpipe. An exhaust pipe for escape of gases generated in an internal combustion engine; *specif.*, in a jet engine, the pipelike structure aft of the exhaust nozzle.

tail surface. A stabilizing or control surface in the tail of an aircraft or missile.

takedown. Disassemble, as of an engine.

takeoff assist. An instance of giving extra thrust to an airplane or missile during takeoff through the use of a rocket motor or other device; also the device used in such a takeoff. See: **jato unit.**

Taliani test. See: **heat tests.**

tally-in. 1. Itemized list of supplies received. 2. Process of recording, by appropriate marks, the number of containers or quantity of materiel received of an itemized list of items included in an incoming shipment.

tally-out. 1. Itemized list of the items included in an issue or shipment. 2. Process of recording, by appropriate marks, the number of containers or quantity of materiel issued or shipped of an itemized list or items included in an outgoing shipment.

Talos. Name applied to a Navy surface-to-air supersonic guided missile. Suitable for use from sea or land based launching sites. Uses a solid fuel, ramjet engine and employs beam rider guidance switching to active homing system for attack.

tamper. In a nuclear weapon, any substance that resists movement for a split microsecond, used so that the active materials may build up greater pressure behind the substance.

tampion. See: **tompion.**

tandem. See: **tandem missile.**

tandem missile. The fore and aft configuration used in boosted missiles, long range ballistic missiles, satellite vehicles, etc. Stages are stacked together in series and are discarded or staged at burnout of the propellant for each stage.

tangential stress. See: **stress, circumferential.**

tangent screw. *Mach.* 1. A worm; so called because it works tangentially on a worm wheel to which it imparts an endless motion. 2. A very fine screw giving a tangential movement for making the final adjustment to an instrument of precision, as a surveyor's transit.

tank. 1. A receptacle or structure, varying in design to contain a liquid or a gas. (Use with modifiers denoting kind of contained fluid, such as fuel, oil ballast and items or installations for which designed, such as aircraft and locomotives.)* 2. See: **TANK, COMBAT, FULL TRACKED.**

tank, amphibious. Vehicle mounting a howitzer or cannon, capable of delivering direct fire from the water as well as ashore, and used in providing early artillery support in amphibious operations. Sometimes referred to as **amtank.** See: **LANDING VEHICLE, TRACKED.**

tank, assault. A **tank, heavy** with increased fire power, used for assault purposes.

TANK ASSEMBLY, FABRIC, COLLAPSIBLE. A group of items designed to provide all the essential material for the hasty assembly of a temporary storage container, which consists of the following type items, fabric collapsible tank, hose and valves, quick disconnect couplings, grooved type couplings and valves.*

TANK, COMBAT, FULL TRACKED. A self-propelled, heavily armored, offensive vehicle having a fully inclosed revolving turret with one major weapon. It may mount one or more machine guns. Excludes self-propelled weapons.

tank damage. See: **damage categories.**

tank damage assessment. Evaluation of the damage done to an armored vehicle following attack by projectiles, bombs or mines. Usually conducted under proving ground conditions to determine adequacy of vehicle design or capabilities of ammunition. See: **damage categories.**

tank destroyer. A self-propelled antitank gun. See: **GUN, ANTITANK, SELF-PROPELLED.**

tank ditch. See: **antitank ditch.**

tank dozer. Standard tank equipped with a detachable bulldozer blade.

tank, duplex drive. Standard tank especially modified by attaching flotation devices, prows, and twin propellers enabling the tank to serve as amphibious tank during landing operations and the crossing of wide rivers.

tank farm. An area in which storage tanks are located, used for the storage of supplies and equipment including bulk solids and liquids.

tank, heavy. **TANK, COMBAT, FULL TRACKED** with weight from 56 to 85 tons.

tank, light. **TANK, COMBAT, FULL TRACKED** designed for missions requiring speed and mobility, such as missions for security and reconnaissance; up to 25 tons in weight.

TANK, LIQUID PROPELLANT, GUIDED MISSILE. A premetered tank designed to be mounted on a truck for transporting liquid propellants and fueling guided missiles. Specifically designed to permit complete drainage of contents.*

tank, medium. **TANK, COMBAT, FULL TRACKED** of 26 to 55 tons in weight.

tank recovery vehicle. See: **RECOVERY VEHICLE, FULL TRACKED.**

tank, super heavy. Heaviest type tank for military use; tank weighing over 75 tons. Cf: **tank, heavy.**

tank transporter. Special purpose wheeled vehicle, or combination of vehicles, designed to transport tanks or other heavy vehicles over highway and natural terrain, and incorporating integral provisions for loading and unloading disabled vehicles without supplemental assistance. See also: **SEMITRAILER, TANK TRANSPORTER; TRAILER, TANK TRANSPORTER.**

tank turret. See: **turret.**

TAPE, PLOTTING. A narrow strip of flexible material graduated and numbered so that a linear dimension greater than one foot is represented to a specified ratio by a division of the tape.*

taper. An airfoil feature in which either the thickness or the chord length, or both, decrease from the root to the tip.

Hence, the expressions, 'taper in plan only' and 'taper in thickness ratio only.'

tapered bore. Term applied to a gun with a tapered bore, and also to its ammunition. The gun bore may be tapered throughout its length or only in the muzzle section. The projectile which starts out as a light weight projectile of the larger caliber may be projected at hypervelocity in the form of a smaller

caliber projectile of normal or heavy weight. The smaller caliber maintains a higher velocity than would the larger caliber (for equal weight projectiles) because of lowered air resistance. For this reason the tapered bore is sometimes used for anti-tank weapons. Sometimes referred to as 'squeeze bore' or 'Gerlich gun,' after its originator.

taper in thickness ratio. A gradual change in the thickness ratio along the wing span with the chord remaining constant.

TAPE, SOUND RECORDING. A thin flexible strip of nonmagnetic material coated with a processed iron oxide upon which sonic variations are recorded by magnetic means.*

tappet. 1. That portion of a valve-operating mechanism which rides against the cam and lifts the valve or push rod. It can usually be adjusted for valve stem clearance. 2. A hand tool for relieving spring pressure when removing or replacing valves.

tappet rod. A rod carrying a tappet or tappets, as one for opening or closing the valves in a steam or an internal combustion engine.

tarage tables. Tables used in conjunction with copper crusher gages to determine interior ballistic pressures. Tables list corresponding pressures for any measured decrease in length of the copper cylinder as a result of firing. See: gage, copper crusher; pressures, gun.

tare effect. In wind tunnel testing, the forces and moments owing to support assembly and mutual interference between support assembly and model.

target. Device used with a plotting board to indicate changing positions of the target.

target. (tgt) A thing or place to be hit or aimed at; any point, mark, person, area, position, or physical object towards which real or simulated missiles or blows may be, or are, directed.

target acquisition. Process of positioning tracking apparatus of a control system so that a designated target is in the radar beam of the tracking radar and visible on the tracking scopes, or fixed in the optical or open sights.

target acquisition radar. An anti-aircraft artillery radar normally of lesser range capabilities, but of greater inherent accuracy than that of the surveillance radar, whose normal function is to acquire aerial targets either by independent search or on direction of the surveillance radar, and to transfer these targets to tracking radars.

target airplane. Any airplane considered to be a target, as an airplane being tracked by radar, or a drone or tow plane used for target practice.

target analysis. Examination of potential targets to determine their military importance, their relative priority for attack, and the capabilities of available weapons for such attack.

target angle. The angle at the target subtended by the observing base line.

TARGET, BULL'S-EYE. An item designed to be fired upon, from a specified range, during practice or

while testing firearms, in order to establish a degree of accuracy. It generally consists of a single, centrally located, inner circle, black in color and having progressively larger concentric rings around it. It may also have one or more similar combinations arranged in various patterns or formations upon a common background. The area between the concentrics decreases in numerical value from the center to the outer ring. The overall shape may be square, rectangular, etc. It is usually constructed of paper, pasteboard, or similar pliable material.*

target charge. See: charge, target.

target date. A date aimed at for completing or beginning an action, as in 'your target date is 5 January.'

target designating system. A system for designating to one instrument a target which has already been located by a second instrument. It employs electrical data transmitters and receivers which indicate on one instrument the pointing of another.

target deviation. Distance from point of impact or point of burst to the target; target error.

target discrimination. That quality of a guidance system which enables it to distinguish a target from its background or between two or more targets in close proximity.

target echo. Radio signal reflected by an aerial or other target and received by the radar station which transmitted the original signal.

target error. See: target deviation.

target, flag, towed. Flag-shaped target towed by an aircraft and used especially for air-to-air target practice; flag target. It consists of a special fabric with metal spreader bars to keep it in a vertical plane and flat while in flight. Cf: target, sleeve, towed.

TARGET HOLDING MECHANISM, TRAINFIRE. An assemblage capable of lowering a target as the result of a bullet impact, or of raising or lowering it by remote control.*

target indicating system. System for providing a means for indicating to the tracker of an anti-aircraft automatic weapon the direction of approach of a suitable target, or the approach of a new target after engagement with one target has been broken off. The operation of this system requires that the tracker slew his weapon in the indicated direction, locate his target, and begin tracking.

target information center. An intelligence center set up afloat or ashore for assembly, evaluation interpretation, dissemination, and coordination of target information for supporting weapons, i.e., artillery, naval gunfire, and air.

target length. Length of a target as it appears to an observer or gunner at the moment gun is fired. Target lengths may be used as units in measuring the leads.

target offset. Horizontal angle at the target between a line from the target to the piece and a line from the target to the observation post.

target of opportunity. 1. Target visible to an observer, and against which fire has not been scheduled or requested. Normally a newly discovered target. 2. In Air Force usage, a target chosen by an attacking formation when the designated target cannot be located or reached, or a target located by tactical air reconnaissance.

target projectile. See: projectile, target practice.

TARGET, RADAR. An item primarily designed to be mounted on a moving object and whose reflecting properties make possible the tracking of the object by radar. May also have provisions for fixed position installation for marking objects, line demarcation, or as a navigational aid for radar-equipped aircraft and vessels.*

target range. Area equipped for practice in shooting at targets. Also called range.

target seeker. A missile, as a bomb or rocket, designed as a seeker (which see); the device within such a missile that directs it to the target.

target-seeking. Of missiles: Designed or made as seekers, as in 'target-seeking bomb.'

target selector. Component of both a target designation system and a target indicating system. It is an off-carriage observing instrument provided for the purpose of selecting an initial or new target, and it is electrically connected to the gun mount in such a manner as to: (1) slew the gun to the approximate azimuth and elevation of a selected target (when the selector is a component of a target designating system); and (2) give the tracker an indication of the direction of approach of selected target (when the selector is a component of a target indicating system).

TARGET SET, SILHOUETTE. Two or more TARGET, SILHOUETTE, with or without accessories, designed for marksmanship training or testing firearms.*

TARGET, SILHOUETTE. An item designed to be fired at from a specified range during the practicing with or in the testing of firearms such as pistols, rifles, and the like, in order to establish a degree of accuracy. It generally consists of a single centrally located image, usually black in color and shaped to simulate the silhouette of a man in prone (head and shoulder) or kneeling position, a tank or series of tanks, and the like. It may or may not have progressively larger outlines of image around it, and may have one or more similar combinations of images arranged in various patterns or formations upon a common background. The areas between the outlines of images are usually designated by assigned numerals decreasing in numerical value from the center to outer edges. The overall shape or appearance may be square, oblong, or irregular, depending upon the simulated outline. It usually consists of paper, pasteboard or similar pliable material.*

target sled. Sled drawn by a cable, used to carry a moving target on a target range.

target, sleeve, towed. Tubular, open-ended bag which fills with air and bellies out when towed by an

aircraft in flight, used as a target. Cf: target, flag, towed.

TARGET, TRAP SHOOTING. A dish-shaped object that is projected into the air by a mechanical device, to provide gunnery practice at moving targets. It is usually designed with a thin dome to crumble on impact of a few bullets and a heavy rim to provide fast spinning flywheel action. There may be a series of steps, or connecting strips, from the rim to the recessed dome. The connecting strips divide the target in many segments which will easily break off if hit by only a few pellets.*

target vulnerability. A factor considered in target selection that relates each potential target to a standard scale in terms of the degree to which it is considered vulnerable. Each target is given a scale number.

Tarheel Ordnance Plant. Ordnance Corps field installation, located at Burlington, North Carolina.

tarpaulin. See: PAULIN.

Tartar. Name applied to a Navy surface-to-air supersonic guided missile for fleet protection against aircraft. A beam rider employing solid propellant.

TAS (abbr). 'True airspeed.'

T-base. Two pieces of wood nailed together in the shape of a T, laid down in soft ground as a base for the tripod of a machine gun.

TC (abbr). 'True course.'

team. Small group of men working together to operate a gun, radio station, or the like.

tear gas. A substance, usually liquid, which, when atomized and of a certain concentration, causes temporary but intense eye irritation and a blinding flow of tears in anyone exposed to it. Also called a 'lacrimator.' Chloroacetophenone is a common tear gas. See also: CHEMICAL AGENT, CHLOROACETOPHENONE; lacrimator.

technical adequacy. Sufficiency of a particular commodity to meet valid requirements.

technical channel. Direct communication channel used by the chiefs of services within the limits and in the manner prescribed by the commander to handle routing technical reports and instructions not involving variations from command policies and directives.

technical characteristics. Those characteristics which pertain primarily to the engineering principles involved in producing equipment possessing desired military characteristics.

technical committee. A committee established and maintained by the chief of each developing agency to effect coordination among the developing and using agencies during research, development, test, type classification, and procurement activities. See: Ordnance Technical Committee.

technical committee action. An action (either formal or 'read-for-record') by a technical committee such as the Ordnance Technical Committee (which see).

technical control. Control exercised by virtue of technical jurisdiction. In the case of personnel, technical control normally implies a degree of control over assignments, such as that exercised over Ordnance officers by the Chief of Ordnance.

technical direction. Direction exercised through a technical channel.

technical evaluation. The study and investigation by a developing agency to determine the technical suitability of material, equipment, or a system, for use in the military services.

technical fire control. The method or means employed to place accurate fire on the target. See: **fire control.**

technical inspection. Inspection of equipment and weapons to determine whether serviceable for continued use or whether repairs are necessary.

technical intelligence. Intelligence pertaining to foreign or enemy technological developments capable of, or having, a practical application to warfare.

Technical intelligence deals, for example, with the principles of design and operation, physical characteristics, performance, nomenclature, and operational capabilities of foreign materiel or equipment. In a broader sense, it may embrace manufacture, methods of storage and maintenance, etc.

technical manual. (TM) An Army publication containing detailed information on technical procedures, including instructions on the operation, handling, maintenance, and repair of equipment.

technical observer. Civilian technical expert, representing a commercial firm, who accompanies troops in the field to observe and report on the operation of mechanical equipment or armament under field conditions.

technical service. A branch of the Army whose principal responsibilities are those of providing technical research and development, procurement, supply and maintenance functions. The Ordnance Corps is one of the technical services; others include Chemical Corps, Corps of Engineers, Quartermaster Corps, Transportation Corps, Army Medical Service. In contrast to *administrative service*; e.g., Adjutant General's Corps, Chaplains, and Military Police Corps. The administrative and technical services are distinguished from the *arms*, primary mission of an *arm* being combat and combat support, e.g., Infantry; but some of the branches have primary missions in both fields; e.g., Corps of Engineers.

technical service contract. Type of contract in which the contractor's civilian personnel perform technical services for the Department of the Army.

technical service depot. Depot which receives, stores, and issues the supplies of one technical service of the Army, for example, an Ordnance depot.

technical service procurement agency. Procurement agency responsible for supervision of purchase or production of items controlled by a technical service stock control point.

technical service stock control point. Office in which records are maintained for the control of an entire stock of groups or sub-groups of items of a technical

service depending on the number, variety and demand for end items and spare parts normally carried in stock.

technical validity. Factual soundness based upon prescribed policies and known local factors and requirements.

telecom (*abbr.*). 'Telecommunication.'

telecommunication. (telecom) 1. Communication at a distance, esp. by electrical or electronic means, such as by telegraphy, radio, television, or the like. 2. *pl.* The science or art of communicating at a distance.

telemeter. 1. An electric or electronic instrument that measures a quantity, as that of speed, angle of attack, temperature, or atmospheric pressure, then transmits the measurements to a distant station. 2. An instrument that measures the distance between an object and the observer, as a range finder. 3. To transmit by telemeter.

The telemeter (sense 1) is used in certain guided missiles and rockets, and scientific apparatus.

telemeter channel. See: **channel, telemeter.**

telemetering. The sequence of events of the process involved in the measuring of a quantity or quantities by telemeter, transmitting and recording the results to a distant station, and in some cases integrating the results with others and connecting them electronically into new impulses that in turn activate a new sequence of events.

telemetering station. A station that emits electronic impulses that become integrated in a telemetering system.

telemetering system. The complete measuring, transmitting and receiving apparatus for remotely indicating, recording, and/or integrating information.

TELEPRINTER. An item which receives electrically transmitted teletypewritten signals and translates these signals into printed characters on a paper roll or tape. May project the message on a screen.*

TELEPRINTER, ELECTROGRAPHIC. An item that transforms a serial input of electrical pulses into a printed message matrix consisting of a pre-disposed groupage of dots formed by electrographic deposition techniques on a surface such as plastic coated paper. For items that print actual characters and/or symbols, see: **TELEPRINTER.***

eleran system. A navigational system which—(a) Employs ground-based search radar equipment along an airway to locate aircraft flying near that airway; (b) Transmits, by television means, information pertaining to these aircraft and other information to the pilots of properly equipped aircraft; and (c) Provides information to the pilots appropriate for use in the landing approach.

TELESCOPE. A single barreled optical instrument used as an assistance to the eye or camera in viewing or photographing distant objects. The chief purposes of the telescope are the enlargement of the visual angle under which a distant object is seen, and a consequent magnifying of the object and/or collection and concentration of a larger beam of light

rendering objects visible or more distinct. The essential parts of a telescope are the objective lens or mirror which collects the beam of light and forms the image, and the eyepiece by which the image is magnified.*

telescope, azimuth tracking. Telescope with which the course or direction of a moving target is tracked. It is a part of a director, a combined observing and computing instrument, that calculates firing data for the future position of the target.

telescope, battery commander's. Telescope that has two lenses and rests on a mount and tripod, used for observing fire and for measuring horizontal and vertical angles in calculating firing data. A binocular instrument. See: **BINOCULAR.**

telescope, bore. 1. A borescope. An optical instrument inserted into the interior or bore of a gun, or forging when finished to size, for examining for flaws or defects. 2. A telescope provided with cross-hairs, and fitted with adapters for centering accurately in the chamber of a gun, for purpose of bore-sighting on a distant target in proof work.

telescope, elbow. L-shaped telescope with the eyepiece at right angles to the objective.

telescope, elevation tracking. Optical instrument which is used in tracking a moving target in elevation.

telescope mount. See: **MOUNT, TELESCOPE.**

telescope, offset. Telescope in which the line of sight is displaced laterally or vertically before emerging in a line parallel to the line on which it entered. This permits a periscopic effect, enabling the viewer to remain behind the protective armor of a tank or the like.

telescope, panoramic. A telescope so designed that the image remains erect and the position of the eyepiece is unchanged as the line of sight is pointed in any horizontal direction.

telescope, straight. Telescope in which the line of sight emerges as a straight line continuation of the line on which it entered, giving the effect of viewing straight through the telescope to the target or object viewed.

telescope, tracking. Telescope used for observing a moving target and following its path.

telescopic sight. Gunsight equipped with a telescope. Sometimes shortened to 'scope.'

telescoping-type equilibrator. See: **equilibrator.**

TELETYPEWRITER. A printing telegraph instrument having a keyboard similar to that of a typewriter for use in transmitting messages, and having a motor-driven signal actuated mechanism for printing received messages directly. For teletypewriter without a keyboard, see: **TELEPRINTER.***

television reconnaissance. Reconnaissance, esp. aerial reconnaissance, in which television is used to transmit the view from the reconnoitering point to another point, either on the surface or in the air.

teller mine. Large land mine employed by the Germans during World War II. It was an antitank mine

weighing about 15 pounds, shaped like a large plate ('teller') and was frequently booby trapped.

temperature coefficient of pressure at constant K. Rocket propellant. The relative change in pressure per degree (C or F as stated) of change in ambient temperature at a constant ratio (K) of propellant surface to throat area.

temperature element. The sensing component, of a temperature transmitter or direct reading indicator, which is responsive to the variations of temperature of its atmosphere.*

temperature, impact. The temperature in a gas after an impact which caused the conversion of a portion of the kinetic energy into heat energy, with a resultant rise in temperature from the ambient.

temperature, stagnation. Aerodynamics. The temperature of the stream which would be realized by conversion of all kinetic energy of the stream into heat energy.

temperature, static. The temperature that would be measured by a thermometer moving with the gas at the gas velocity, and having no radiation losses.

template. See: **templet.**

templet. Pattern or form, such as a thin plate or board, that is used as a guide or scale for reproducing designs on other surfaces, or for marking off graduations or distances on maps, photographs, etc.

term contract. A purchase in which the contract is made for a definite period, and against which orders may be placed from time to time for varying quantities, as necessity arises.

terminal ballistics. See: **ballistics.**

TERMINAL BOARD. An item usually consisting of insulating material, which is specifically designed to have fastened thereon or on which are fastened terminal(s), such as screws, solder lugs, solder studs, solderless connectors, clips, and the like. It is usually used for junctions or terminations of wire or cable assemblies. Does not include items as defined above with parts, such as resistors and capacitors mounted thereon.*

TERMINAL BOX. An inclosure which includes, mounts and protects one or more terminals and/or terminal boards. It is designed for and may include a cover and such accessories as mounting hardware, brackets, locks, and conduit fittings.*

terminal guidance. See: **guidance, terminal.**

terminal velocity. 1. The constant velocity of a falling body attained when the resistance of air or other ambient fluid has become equal to the force of gravity acting upon the body. Sometimes called 'limiting velocity.' 2. Velocity at end of trajectory, i.e., impact velocity (which see).

terminated portion of contract. That portion of a terminated contract which does not relate either to completed work or material delivered and accepted under the contract or to any continued portion of the contract.

termination claim. Any claim or demand by a prime contractor or subcontractor for compensation arising out of the termination of a contract or subcontract.

ternary. *Electronic computers.* Pertaining to the system of notation utilizing the base of 3, employing the characters 0, 1, and 2.

terrain. Ground or a tract of ground, esp. considered with respect to its extent or topography as factors in a military operation.

terrain return. See: ground return.

terrestrial fire. Gunfire directed against a land or water target.

terrestrial reference guidance. See: guidance, terrestrial reference.

Terrier. Name applied to a Navy surface-to-air supersonic guided missile for fleet defense. *Terrier I* employs solid fuel and beam rider guidance, while *Terrier II*, a longer range version, uses liquid fuel and radar homing.

test. 1. A procedure or action by which a device, piece of material, piece of machinery, or the like is subjected to conditions, real or simulated, that will determine its true qualities or capabilities, or its suitability for use in a particular kind of operation. 2. A procedure or action for determining, under real or simulated conditions, the effectiveness and suitability of a system, method, or the like. 3. To subject a person, thing, method, theory, or the like to a test. See also: engineering test; user test.

test ammunition. In a general sense, any ammunition used, or intended to be used, for test purposes. Specifically, ammunition prepared for testing firearms. See also: cartridge, test, high pressure; cartridge, test, low pressure.

TEST BENCH SET, FIRE CONTROL SYSTEM. A complete electronic set for testing, by the substitution method, the components of a fire control system. The item consists of two or more test benches on which are mounted operable fire control system components, and includes provisions for the application of electrical operating power. Components of a fire control system are systematically substituted for the test bench component until the defective system component is located.*

test, engineering. See: engineering test.

TEST EQUIPMENT, ELECTRONIC SHOP, BASE MAINTENANCE. A collection of items such as oscilloscopes, frequency meters, signal comparators, signal generators, audio oscillators and other necessary equipment for use in testing electronic components of a guided missile remote control system in a base maintenance shop. Does not include hand tools for repair of items under test.*

TEST EQUIPMENT, ELECTRONIC SHOP, FIELD MAINTENANCE. A collection of items such as oscilloscopes, frequency meters, pulse generators, band pass filters, amplifier recorders and other necessary equipment for use in testing electronic components of a guided missile remote control system in a field maintenance shop. Does not include hand tools for repair of items under test.*

TESTER, BRAKE, MOTOR VEHICLE. A floor mounted testing unit consisting of four skidproof runways, each placed to accommodate a wheel of the vehicle being tested, complete with a recording mechanism for measuring the braking energy of the vehicle and indicating whether brakes are unequal or too weak.*

tester, firing system. An electrical device for testing the continuity or other electrical characteristics of a rocket-firing system.

TESTER, INTERNAL COMBUSTION ENGINE. A device consisting of two or more gages or indicators mounted in a single unit, and capable of determining two or more different mechanical performance characteristics of an internal combustion engine, or its component systems, while functioning under engine-operating conditions, by making either a single or a multiple test in order to determine one or more engine characteristics similar to the following: cylinder compression, engine oil pressure, carburetor adjustment, manifold vacuum, fuel pump pressure, and the like. It does not include permanently installed gages, or any devices designed to test electrical components or characteristics of an engine.*

TESTER, MATERIAL HARDNESS. An instrument designed to measure the hardness of metals, plastics, rubber and other solids, by methods based on resistance to penetration by an indenter of greater hardness than the material being tested.*

test height. In a leaf spring, the camber under a load serving to test its strength, elasticity, etc.

test, high pressure. (HPT) Indicates, in cartridge nomenclature, that item is intended to produce a high pressure in the weapon and is to be used for test purposes. See: cartridge, test, high pressure.

testing target. Special target used in boresighting a gun. It has two marks separated by the same distance as that between the sight and the axis of the bore, so that the gun may be pointed at one mark and the sight at the other.

test, leapfrog. *Electronic computers.* A program designed to discover computer malfunction, characterized by the property that it performs a series of arithmetical or logical operations on one group of storage locations, transfers itself to another group of storage locations, checks the correctness of the transfer, then begins the series of operations over again. Eventually, all storage positions will have been occupied and the test will be repeated.

test, low pressure. (LPT) Indicates, in cartridge nomenclature, that item is intended to produce a low pressure in the weapon and is to be used for test purposes. See: cartridge, test, low pressure.

test piece. Any gun (or other weapon) which is compared with another gun in calibration. The gun used as a basis of comparison is called the reference piece; any other gun adjusted accurately with reference to it is a test piece.

test, service. See: user test.

test set. *Electrical.* A single instrument or grouping of instruments, with or without accessories, designed

for use in making qualitative and/or quantitative examinations of electronic or electrical items and/or equipments. Do not use if a more specific item name is available. (Use an application modifier, such as capacitor or radio.)*

TEST SET, DOPPLER RADAR RECEIVER. A test set primarily designed for use in making examinations of the adjustments and operating efficiency of radar receivers which are part of moving target indicating (MTI) radar sets.*

TEST SET, ELECTRICAL CIRCUIT, GUIDED MISSILE LAUNCHER. A test set specifically designed for use in making examinations of electrical circuits on a guided missile launcher.*

TEST SET, FIRE CONTROL SYSTEM. A test set primarily designed for use in making examinations of fire control system.*

TEST SET, GENERATOR AND VOLTAGE REGULATOR, AUTOMOTIVE. A test set primarily designed for use in making examinations of low-voltage automotive generators and voltage and current regulators.*

TEST SET, GUIDED MISSILE. A test set primarily designed for use in making examinations of electronic components, circuits and/or electrically controlled systems within a guided missile. Excludes individual test sets designed for a single specific function.*

TEST SET, LEAKAGE, GUIDED MISSILE DRAINAGE EQUIPMENT. A portable device consisting of valve(s) and coupling hoses which are connected to the defueling lines of a guided missile to supply air for leak testing the missile propulsion draining equipment. May also be used in purging the fuel and oxidizer systems after drainage.*

TEST SET, TELEMETERING SYSTEM. A test set which is primarily designed for use in making examinations of a telemetering system.*

TEST SET, TIME FUZE. A test set primarily designed for use in making examinations of a time fuze.*

test stand. 1. A strongly built stationary stand on which a reciprocating engine is tested. 2. A stand on which a jet engine, rocket engine, or the like is mounted for testing and measuring thrust. Also called a 'proving stand' or 'thrust stand.'

TEST STATION, GUIDED MISSILE, TRUCK MOUNTED. A complete electronic test station specifically designed to perform all field tests on a guided missile prior to preparation for firing.*

tetraethyl lead. A liquid, $Pb(C_2H_5)_4$, used as an antiknock in gasoline.

tetrahedron. A geometric figure having four faces or sides. Applied to objects more or less resembling a tetrahedron, as (a) a kind of beach or antitank obstacle, or (b) a four-pronged device dropped on enemy roads or airfields to puncture tires.

tetranitrocarbazole. (TNC) An explosive material used by the Germans in pyrotechnic compositions during WW II. A crystalline material, slightly less

sensitive to impact than Explosive D. Since the properties are not markedly superior to TNT or Explosive D, it is considered suitable for highly specialized uses only.

tetryl. 2,4,6-trinitrophenylmethylnitramine. A crystalline explosive of high sensitivity and brisance, used especially as a detonator or booster, and sometimes as a bursting charge in small caliber missiles.

tetrytol. A high explosive mixture of tetryl and TNT in any of several proportions which permit melt loading (which see).

tgt (abbr). 'Target.'

TH (abbr). 1. Chemical agent, 'thermate.' 2. Chemical agent, 'thermite.' 3. 'True heading.'

TH1 (abbr). Specific composition of chemical agent, 'thermite.'

TH2 (abbr). Specific composition of chemical agent, 'thermate.'

TH3 (abbr). Specific composition of chemical agent, 'thermate.'

theater of operations. Portion of a theater of war necessary for military operations, either offensive or defensive, pursuant to an assigned mission, and for the administration incident to such military operation; theater limits are designated by competent authority.

theater of war. That area of land, sea, and air which is, or may become, involved directly in the operations of war.

theater stock level. Quantity of supplies authorized by the Department of the Army to be maintained in a theater of operations as stock on hand ready for issue.

THEODOLITE. A precision telescopic instrument generally used in surveying work. The optical systems for reading the circles are so designed that readings are taken at each end of the circle diameter simultaneously and automatically averaged by operation of the optical micrometer. It has a fully inclosed optical reading system including vertical and horizontal circles. It must be leveled by three leveling screws.*

thermal conductivity. Heat flow per unit of area per unit temperature gradient.

thermal efficiency. The efficiency with which a rocket engine, jet engine, internal combustion reciprocating engine, or any other engine employing heat, converts the total heat energy of its fuel into energy available for propulsion. Cf: overall efficiency.

thermal resistor. See: thermistor.

thermate. (TH) See: CHEMICAL AGENT, THERMATE.

thermistor. [A contraction of *thermal resistor*.] A resistor whose value varies with temperature in a definite desired manner. Used in circuits to compensate for temperature variations in other parts, or to measure temperatures, or as a nonlinear circuit element.

Thermit. Trademarked term for CHEMICAL AGENT, THERMITE.

thermite. (TH) See: CHEMICAL AGENT, THERMITE.

thermocouple. A junction of two dissimilar metals in which heat energy is changed directly into electrical energy.*

THERMOCOUPLE, CONTACT. A thermocouple whose thermojunction is specifically designed to mount on, attach to, or touch a solid.*

THERMOCOUPLE, HEATING ELEMENT. A thermocouple which includes a resistance element designed to transfer heat of the element into its thermojunction.*

THERMOCOUPLE, IMMERSION. A thermocouple whose thermojunction is specifically designed to be placed or dipped within a fluid.*

thermodynamics. The science that treats of the mechanical action of heat, or the relationship of heat and mechanical energy, and the conversion of one into the other.

thermojet. Air duct type engine in which air is scooped up from surrounding atmosphere, compressed, heated by combustion, and then expanded and discharged at high velocity.

thermometer, propellant temperature. See: indicator, propellant temperature.

thermonuclear. Of or pertaining to nuclear reactions or processes caused by heat, esp. to nuclear fusion caused by the intense heat of an atomic bomb explosion. See: fusion, nuclear.

thermopile. An instrument consisting of several thermocouples so arranged as to give, when heated, a multiplied thermoelectric current; often used for detecting very slight variations in temperature. See: detector, infrared.

thermoplastic. See: plastics.

thermosetting. See: plastics.

thermostat. An automatic device which converts expansion of heated solids, fluids, or gases into movement and power sufficient to operate small devices. May be adjustable or set to operate at a definite temperature and/or pressure.*

THERMOSTAT, FLOW CONTROL. A thermostat which controls the flow of fluid or gases by actuating a valve or shutter for cooling or heating purposes.*

thickened fuel. Gasoline or a blend of gasoline and light fuel oil with THICKENER, INCENDIARY OIL added; used as an incendiary fuel in flame throwers and BOMB(S), FIRE. See also: CHEMICAL AGENT, INCENDIARY OIL; fuel thickener; unthickened fuel.

THICKENER, INCENDIARY OIL. A material which, when added to an incendiary liquid, increases the viscosity.

thickness, profile. See: profile thickness.

thickness ratio. The ratio of the maximum thickness of an airfoil section to the length of its chord.

thirty. Popular term for 'caliber .30 machine gun.' Usually in *pl.*, in reference to two or more such guns mounted on an aircraft, or in a multiple mount.

Thompson submachine gun. Caliber .45, aircooled automatic weapon that can be carried and operated by one man.

Thor. Name applied to an Air Force surface-to-surface land based intermediate range ballistic missile. Utilizes liquid fuel and inertial guidance.

three-dimensional flow. See: flow, three-dimensional.

throat. The most constricted area or section of a duct, passage, or the like, as of a jet nozzle.

throat block. See: choke ring.

throat ring. See: choke ring.

throttle. 1. In an internal combustion engine, the valve (*throttle valve*) incorporated in or just outside the carburetor, controlling the volume of vaporized fuel charge delivered to the cylinders. 2. The pedal or lever (*throttle lever*) controlling this valve. 3. To obstruct the flow of, as steam to an engine esp. by a throttle valve; hence, to reduce the speed of, as an engine, by such means; often with *down*, as, 'he throttled down the car to twenty miles per hour.'

throttling bar. A wedge-shaped bar attached to the interior wall of a recoil cylinder. A rectangular notch in the recoil piston moves over the bar, forming an aperture through which the recoil oil must flow. The aperture decreases during recoil until, at the end of recoil it is completely closed, thus stopping the flow of liquid and bringing the recoiling tube to rest.

throttling groove. A groove of varying width or depth cut on the interior wall of some recoil cylinders to control the passage of oil, hence the recoil resistance.

throttling rod. A tapered rod attached to a recoil cylinder. The piston rod is hollow to receive the throttling rod during recoil, and oil is forced through the orifice around the throttling rod. As recoil proceeds the larger section of the throttling rod comes into the throttling orifice until, at the end of recoil, the throttling rod nearly seals the throttling orifice, thus bringing the recoiling tube to rest.

throttling valve. *Specif.* Part of a variable recoil system. A spring-loaded valve through which recoil oil must flow during recoil. As the gun is elevated the spring pressure is increased by means of a control arm. The valve thus offers greater resistance to the flow of recoil oil and the length of recoil is reduced. In a similar manner, depressing the gun decreases the spring pressure of the valve, causes less resistance to oil flow and hence greater length of recoil.

throwout. A device for throwing a machine out of gear; in automotive vehicles, the mechanism or assemblage of mechanisms by which the driven and driving plates of a clutch are separated.

thrust. 1. The driving force exerted on any aircraft, rocket, guided missile, or other object by its rotating propeller or rotor blades, jet engine or engines, or other propulsive device or force. 2. *Specif.* Jet thrust (which see).

thrust augments. Any contrivance used for thrust augmentation, as a venturi used in a rocket, an afterburner, etc.

thrust coefficient. *Aerodynamics.* A dimensionless coefficient equal to the thrust divided by the product of dynamic pressure and reference area.

THRUSTER, CARTRIDGE ACTUATED. An item operated by gases generated by explosion of a cartridge. The item provides thrust for opening or closing latches, hatches, and the like, and/or positioning aircraft components such as instrument panels, seats, etc., to facilitate emergency escape of personnel.*

thrust horsepower. The thrust of a jet engine or rocket expressed in terms of horsepower.

Thrust is converted into horsepower by the following formula: thp equals thrust pounds times aircraft speed in miles per hour divided by 375.

thrust line. A line along which thrust acts, such as the axis of a propeller shaft, rocket motor or rocket engine.

thrust load. A load or pressure parallel to or in the direction of the shaft. That is, the thrust load (on a bearing) comes directly along the axis of the bearing; as the thrust load on the wheel bearings of a motor vehicle when it is going around a curve.

thrust output. The net thrust delivered by a jet engine, rocket engine, or rocket motor.

THRUST PLATE, TORPEDO. An item designed to be used with aircraft-launched torpedoes. Its purpose is to prevent fore-and-aft motion of the aircraft from being transmitted to the torpedo during catapult takeoffs and arrested landings. It may be secured to either the aircraft or torpedo.*

thrust-pound. A unit of measurement for the thrust produced by a jet engine or rocket, as in '5,000 thrust-pounds.'

thrust, specific. See: *specific thrust.*

thyatron. *Electronic computers.* A hot-cathode, gas-discharge tube in which one or more electrodes are used to control electrostatically the starting of a unidirectional flow of current.

TI (abbr). 'Target identification.'

tier. A horizontal layer of a column, row, or stack. Tiers are numbered in the order of their stowing from the bottom up.

TIE ROD, STEERING. An item designed to form a connection or link, either directly or indirectly between the steering knuckle arms. It is used to maintain alignment of the wheels and to facilitate steering of the vehicle.*

tilt. The inclination of a physical object from what is considered its normal or standard position.

a. The inclination of an aerial camera from the vertical, measured by the angle between the camera axis and a plumb line dropped from the optical center. b. The projection of this inclination to the photograph taken. c. The inclination of an aircraft, winged missile, or the like from the horizontal, measured by reference to the lateral axis or to the longitudinal axis. d. The inclination of an antenna reflector from the horizontal.

time. To adjust or regulate an engine, automatic

weapon, or other mechanism or device so that the events in its cycle of operation occur in a proper sequence; to regulate a mechanism or device for a given rate, duration of operation, etc. Hence, **timing** (which see).

time bomb. See: *bomb, time.*

time-change component. A component (of an end item) which because of design limitations or safety is specified to be rebuilt or overhauled after a specified period of operation (e.g., an aircraft component).

time constant. In electronics, the time required for a varying quantity to reach within $1/e$ of its total change (approximately 63.2 percent of its total change); i.e., in a capacitor-resistor circuit, the time in seconds for the capacitor to reach approximately 63.2 percent of its full charge after a steady voltage is applied; in an inductor-resistor circuit, the time in seconds required for the current to reach approximately 63.2 percent of its final value, after a steady voltage is applied.

time correction. Difference between the adjusted, zero height of burst time setting and the firing table time setting for a particular horizontal range.

time fire. Fire in which fuzes are set to act after a fixed time interval and before impact.

time fuse. See: *FUSE, BLASTING, TIME.*

time fuze. See: *fuze, time.*

time gain control. See: *differential gain control.*

time interval. Period of time between two successive observations made on a moving target during tracking.

time of flight. Elapsed time in seconds from the instant a projectile or other missile leaves the gun or launcher until the instant it strikes or bursts.

time on target. Term used to describe the method of firing on a target in which various artillery units so time their fire as to assure all projectiles reaching the target simultaneously.

timer. *Radar.* A device in a radar set that establishes the pulse rate and controls the timing of other elements in the set.

time, standard civil. Mean solar time based upon the transit of the sun over a certain specified meridian, called the time meridian, and adopted for use over a considerable area. With a few exceptions, standard time is based upon a meridian which differs by a multiple of 15 degrees from the meridian of Greenwich. Civil time begins at midnight.

timing. Adjustment of a small arms weapon so that it will perform each function at a predetermined point in the cycle of operation. This adjustment aids in the elimination of stoppages caused by incorrect positioning of functioning parts of the weapons at a predetermined point in the cycle of operations. Necessity for correct timing is indicated by the fact that the cycle of operation may be repeated several hundred times per minute in automatic weapons.

timing gears. In internal combustion reciprocating engines, the gear train through which the crankshaft

top dead center. The dead center position of an engine piston and its crankshaft arm when at the top of its stroke.

TopSec (abbr). 'Top Secret.'

top secret. (TopSec) Of classified material: Having such status that its unauthorized disclosure would cause exceptionally grave damage to the US.

Often capitalized or written in full caps. See: classification; defense information.

toromatic transmission. See: transmission, toromatic.

torp (abbr). 'Torpedo.'

torpedo. (torp) 1. A missile designed to contain an explosive charge and to be launched into water, where it is self-propelling and usually directable. Used against ships or other targets in the water. When designed for launching from aircraft, it is sometimes called an 'aerial torpedo.' 2. An explosive device for railroad signaling. Sense 1 is intended unless otherwise indicated. See also: torpedo, aerial; TORPEDO, SIGNALING, RAILROAD.

torpedo, aerial. 1. A torpedo (which see) designed or adapted to be launched from flying aircraft. 2. An aerial bomb guided through the air to its target by remote control, as a bomb, glide (also see). *Loose usage.*

torpedo bombing. The launching of a torpedo or torpedoes from an aircraft against a target in the water.

torpedo, dummy. See: DUMMY TORPEDO.

TORPEDO MAIN ASSEMBLAGE. A group of components consisting of an AIR FLASK, TORPEDO; BATTERY COMPARTMENT, TORPEDO or a TORPEDO AFTER BODY AND TAIL. It may include a torpedo nose assembly but does not include a WARHEAD, TORPEDO or EXERCISE HEAD, TORPEDO.*

torpedo, rocket assisted. (RAT) A torpedo (which see) designed to be fired into the air by rocket and to drop into the water by parachute. Upon entering the water the torpedo seeks its underwater target by a special homing device.

TORPEDO, SIGNALING, RAILROAD. An item consisting of an explosive charge with means for attaching to a railroad rail. When run over by a locomotive or car wheel, the resulting explosion serves as a signal to alert the train crew.*

torpex. (tpx) A high explosive consisting of TNT, cyclonite, and aluminum powder, used especially in torpedoes, mines, and depth bombs.

torque. *Mechanics.* A moment that produces or tends to produce rotation, twisting, or torsion, as that of a propeller shaft driven by a tangential force. See: torsion.

The *deflecting torque* of an instrument is the moment produced by the quantity measured that acts so as to cause the deflection of the pointer.

The *restoring torque* is the resultant moment acting to return the instrument pointer to a position of equilibrium, usually zero, when displaced from that position.

The *starting, or static, torque* of an electric motor or the like, is the torque at standstill; for an induction motor it is the minimum torque for any angular position of the locked rotor.

The *pull-in torque* is the maximum constant torque under which a motor will accelerate from rest to approximate normal speed.

The *pull-out torque* is the maximum torque a motor will carry without an abrupt drop in speed.

torque amplifier. *Electronic computers.* A device possessing input and output shafts and supplying work to rotate the output shaft in positional correspondence with the input shaft without imposing any significant torque on the input shaft.

torque arm. In automotive vehicles, an arm to take the torque of the rear axle. At the rear it is connected with the differential case (either rigidly or by a joint) and at the front it is always joined to a cross member of the frame. It performs the same functions as a torque tube (which see) and serves also, in some constructions, as the means of transmitting the driving effort of the wheels to the chassis frame, leaving the springs free to take care only of vibration of the vehicle on the road. It prevents the axle housing from twisting when the power or brakes are applied.

torque converter. *Automotive.* A device for converting the speed and torque at the driving shaft to that required by the driven shaft. An automotive transmission which permits an engine to run at the speed which produces its greatest horsepower.

torque, locked rotor. See: rotor torque, locked.

torque reaction. On a shaft-driven vehicle, the reaction between the bevel pinion with its shaft (which is supported in the rear-axle housing) and the bevel ring gear (which is fastened to the differential housing) that tends to rotate the axle housing around the axle instead of rotating the axle shafts alone.

Protection against torque reaction can be had in the following methods (which see): torque tube; torque arm; Hotchkiss drive.

TORQUE ROD, TANDEM AXLE. A metal device designed to insure correct spacing and alignment of truck and trailer axles.*

torque tube. In automotive vehicles, a tube surrounding the propeller shaft to take the torque, usually a unit with the rear-axle housing at the rear but with a universal joint at the front where it is supported by a cross-frame member or by the rear end of the transmission case. See: torque arm.

torque wrench. See: WRENCH, TORQUE.

torsigraph. A torsion meter.

torsile. Pertaining to torsion.

torsion. The internal moment of a body subjected to twisting or wrenching, as by the application of torque to one end of a shaft while the other is held fast or turned in the opposite direction; the act of turning so as to create this moment. Cf: torque.

torsional vibration. Oscillatory twisting vibration in a rotational direction, which would tend to make a

body mounted on one end of a shaft whip back and forth with respect to a body on the other end.

torsion balance. An instrument used to measure minute forces, as electrostatic or magnetic attraction and repulsion, by the torsion of a wire or filament, the angle of torsion being proportional to the amount of force exerted.

torsion bar. A bar which acts in torsion as a spring, used on some tanks and gun motor carriages for the suspension of the vehicle and for hatch hinges. Also now used for suspension of other vehicles and for other purposes.

torsion bar equilibrator. See: equilibrator.

TORSION BAR, SUSPENSION. A straight metal item having a solid or tubular circular cross section with serrations, flats, or the like, on each end. It is designed to withstand a severe twisting action along its longitudinal axis, while held fast at the ends. It is used in the suspension system of a vehicle to absorb road shock. See also: **TORQUE ROD, TAND-DEM AXLE.***

toss bombing. A bombing action that involves the use of centrifugal force to carry the bomb dropped away from the bomber.

total impulse. The product of the thrust and the time over which the thrust is produced by burning a specific fuel or fuel combination, expressed in pounds (force)-seconds. Used especially in reference to a rocket motor or a rocket engine.

towbar. An item which connects to a vehicle that is not equipped with an integral drawbar, for the purpose of towing or moving the vehicle. See also: **drawbar.***

towed artillery. Artillery weapons designed for movement as trailed loads behind prime movers or draft animals. Some adjustment of the weapon is necessary to place it in firing position.

towed load. The weight of a gun, carriage, trailer, or other equipment towed by a prime mover.

towed-target firing. Antiaircraft practice fire against a target towed by an aircraft.

tow target. Target for antiaircraft fire or aerial gunnery practice, drawn behind an aircraft. See: **target, flag, towed; target, sleeve, towed.**

toxic gas. A war gas (which see) that produces a poisonous effect.

toxic gas yard. Unroofed space prepared for the storage and handling of toxic gases.

toxic warfare. Warfare in which chemicals, biological agents and atomic fission products are used to produce casualties.

TP (abbr). 'Target practice.'

TP-T (abbr). 'Target practice with tracer.'

tpx (abbr). 'Torpex' (explosive).

trac (abbr). 1. 'Tractor.' 2. 'Tracer.'

tracdr (abbr). 'Tractor-drawn.'

trace. 1. *Radar.* The line on a radar screen made by the time base. 2. Path of a tracer bullet.

tracer. (trac) (T) 1. A tracer bullet (which see). 2. A tracer element for any projectile. 3. Tracer mixture (which see) for loading into tracer bullets or elements. 4. As part of ammunition nomenclature, indicates item is equipped with tracer.

tracer ammunition. Any ammunition equipped with tracer (which see).

tracer bullet. A bullet containing a pyrotechnic mixture to make the flight of the projectile visible by day and night. Cf: bullet, incendiary.

tracer control. Adjustment of fire based on observation of trajectories of tracer ammunition.

tracer control trainer. Device used to train gunners in fire control, using tracer ammunition.

tracer, dummy. Inert filler for tracer cavity in a projectile.

TRACER, GUIDED MISSILE. A pyrotechnic tracer which provides a sign to permit tracking of a guided missile. See also: **FLARE, GUIDED MISSILE.**

tracer hump. An optical illusion in which a hook or curvature appears in the tracer stream.

tracer mix. Short for tracer mixture.

tracer mixture. A pyrotechnic composition, used for loading tracers. Also called 'tracer composition.'

track. 1. Actual path of an aircraft above, or a ship on, the surface of the earth. The course is the path which is planned; the track is the path which is actually taken. 2. An aircraft's trace on a radar screen or on a plot; the aircraft that makes such a trace. 3. One of the two endless belts on which a full-track or half-track vehicle runs. 4. Metal part forming a path for a moving object; for example, the track around the inside of a vehicle for moving a mounted machine gun. 5. To observe and mark on a chart the successive positions of a moving target. 6. To keep a gun properly aimed or to point a target-locating instrument continuously at a moving target. 7. To follow a target on the ground from a moving aircraft, as done in bombing. 8. To follow or pursue an enemy.

tracker. 1. A person who tracks a moving object. 2. A radar or other device used to track a moving object.

TRACKER, OPTICAL. A unit designed specifically for optically tracking a guided missile, or moving target, and for continuously transmitting and/or receiving, by electrical means, tracking data to and from other units of a ground guidance system.*

tracker test. The overall check of the orientation and functioning of materiel of an antiaircraft artillery gun battery. It is performed by tracking an aerial target with present position data only being transmitted.

tracking, automatic. The process of utilizing range data and/or angular data in such a manner as to obtain error signals, which are then used to drive devices which keep the tracking system locked on a target.

tracking point. A point centrally located in the outline of the target as seen by the sight operator. For

teaches methods and techniques of antiaircraft gunnery.*

TRAINER, GUIDED MISSILE. A trainer designed to instruct the student in the use of the equipment, and/or the various methods and techniques used in launching guided missiles.*

TRAINER, GUN SIGHT. A mock-up of an operational gun sight of such size and proportions as to preclude operational use.*

TRAINER, MACHINE GUN. A machine gun, modified by the substitution of a group of internal parts so that the weapon will utilize a smaller caliber ammunition for training purposes.*

TRAINER, RIFLE SIGHTING. An item used for training purposes, for giving instructions in sighting, aiming and method of adjusting sights for rifles. Generally consists of a rectangular shaped piece of cardboard, or similar material. Each face has a definite function. Usually the front face is designed to simulate the front sight and a target bull's-eye as viewed through the rear peep sight of a rifle. The bull's-eye and front sight can be manually manipulated to give a correct sight picture or to demonstrate common errors. The rear face has graduations for windage and elevation adjustments which can also be manually manipulated to demonstrate degree of correction.*

train, explosive. See: explosive train.

training aid. An item used by an instructor in presenting theory and principles and in familiarizing students with the equipment. It is normally used in group training. Do not use if a more specific name is available.* Cf: training device.

TRAINING AID, ANTIPERSONNEL MINE, RUSSIAN. A training aid designed for use in familiarizing personnel with Russian antipersonnel mines.*

TRAINING AID, ANTITANK MINE, RUSSIAN. A training aid designed for use in familiarizing personnel with Russian antitank mines.*

TRAINING AID, AUTOMATIC GUN. A training aid designed to simulate the functioning of an automatic gun for instructional purposes.*

TRAINING AID, AUTOMATIC PISTOL. A training aid designed to simulate the functioning of an automatic pistol for instructional purposes.*

TRAINING AID, CARBINE. A training aid designed to simulate the functioning of a carbine for instructional purposes.*

TRAINING AID, CARBURETOR. A training aid designed for instruction in the theory, principles and operation of internal combustion engine carburetors.*

TRAINING AID, CLUTCH ASSEMBLY. A training aid designed for instruction in the theory, principles and operation of engine clutch assemblies.*

TRAINING AID, CRANKSHAFT. A training aid designed to demonstrate oil flow through the drilled oil passages through the crankshaft to the camshaft and main bearings and through the main and connecting rod journals and its return to the oil pan.*

TRAINING AID, CYLINDER HEAD. A training aid designed to demonstrate the complete assembly of an internal combustion engine cylinder head.*

TRAINING AID, DIFFERENTIAL. A training aid designed for instruction in the theory, principles and operation of automobile, truck, tractor and similar vehicle differentials.*

TRAINING AID, DISTRIBUTOR. A training aid designed for instruction in the theory, principles and operation of ignition system distributors.*

TRAINING AID, ELECTRONIC CIRCUIT. A training aid designed to demonstrate theory, operation, and principles of typical electronic items and basic circuits.*

TRAINING AID, GUIDED MISSILE. A training aid designed to familiarize guided missile personnel with the complex systems contained in a guided missile.*

TRAINING AID, INTERNAL COMBUSTION ENGINE. A training aid designed for instruction in the theory, principles and operation of internal combustion engines.*

TRAINING AID, MACHINE GUN. A training aid designed to simulate the functioning of a machine gun for instructional purposes.*

TRAINING AID, MACHINE GUN HEAD SPACE. A training aid designed for classroom instruction in checking and adjusting head space in machine guns.*

TRAINING AID, MACHINE GUN OIL BUFFER. A training aid used to visually instruct students in the operation and assembly of an actual recoil mechanism.*

TRAINING AID, MAGNETO. A training aid designed for instruction in the theory, principles and operation of ignition magnetos.*

TRAINING AID, MINE FUZE, RUSSIAN. A training aid used to familiarize personnel with Russian type mine fuzes.*

TRAINING AID, OSCILLOSCOPE. A training aid designed to instruct the student on meanings of an oscilloscope.*

TRAINING AID, RADAR. A training aid designed for instruction in the operation and function of radar.*

TRAINING AID, RIFLE. A training aid designed to simulate the functioning of a rifle for instructional purposes.*

TRAINING AID, WATER PUMP. A training aid designed for instruction in the theory, principles and operation of internal combustion engine water pumps.*

training ammunition. Ammunition used for training persons in marksmanship, handling weapons, etc.

training device. A device or item of equipment designed or modified for use by the trainee in training. Distinguished from a training aid, which see.

training grenade. See: grenade, training.

training projectile. See: projectile, training.

training rocket. See: ROCKET, TRAINING.

trajectory. 1. The curve in the vertical plane traced by a bullet, projectile, bomb, or other object thrown, launched, or trajected by an applied exterior force, the projectile continuing in motion after separation from the force. 2. Also the path traced through space in the vertical plane by a winged guided missile, a rocket, or a ballistic missile, such missile being propelled by fuel either the whole distance or a part of it.

trajectory chart. (tjc) Diagram of a side view of the paths of projectiles fired at various elevations, under standard conditions. The trajectory chart is different for different guns, projectiles and fuzes.

transceiver. A unit combining the radio or radar transmitter and receiver, such as is used in a transponder.

transducer. A device which converts the energy of one transmission system into the energy of another transmission system.

A loudspeaker and a phonograph pickup are two examples of transducers. The former changes electrical energy into acoustical energy, and the latter changes mechanical energy into electrical energy.

transducer, active. A transducer whose output waves are dependent upon sources of power, apart from that supplied by any of the actuating waves, which power is controlled by one or more of these waves.

transducer, electric. A transducer in which all of the waves concerned are electric.

transducer, ideal. A hypothetical passive transducer which transfers the maximum possible power from the source to the load.

In linear transducers having only one input and one output, and for which the impedance concept applies, this is equivalent to a transducer which (a) dissipates no energy, and (b) when connected to the specified source and load presents to each its conjugate impedance.

transducer, unilateral. A transducer which cannot be actuated at its outputs by waves in such a manner as to supply related waves to its inputs.

transfer function. The function relating the output of a closed-cycle servosystem to its input.

transfer (of control) instruction. *Electronic computers.* An instruction which (conditionally or unconditionally) causes the next instruction word to be selected from a specified memory location.

transfer of fire. 1. Shifting of fire from one target to another, applying the corrections for the first target to the data for the second target. In this meaning, sometimes called transfer. 2. Fire on a target, based on an adjustment on a point whose location in respect to the target is known.

transformer. An electrical device having no continuously moving parts, which by electro-magnetic induction transfers electrical energy from one or more circuits to one or more other circuits at the same frequency, usually with changed values of voltage and current.*

transient motion. A motion that exists when a me-

chanical system or apparatus passes from one steady state to another.

transient target. See: *fleeting target.*

TRANSISTOR. An active semiconductor device with three or more electrodes. Excludes SEMICONDUCTOR DEVICE, DIODE and SEMICONDUCTOR DEVICE, PHOTO.* The transistor is similar to the vacuum tube in uses, but is itself a non-vacuum device.

TRANSIT. An instrument having two coaxial centers, one inside the other. A telescope is attached to the inner center and mounted in such a manner that it may be rotated in vertical or horizontal arcs. The outer center carries the horizontal scale. The telescope and horizontal circular scale may rotate about the same axis, independent of each other, or integrally, as a single unit. The scales are read visually by means of verniers. The instrument is usually leveled by means of four leveling screws. It is used for measuring horizontal, or horizontal and vertical angles.*

transition fit. See: *fit.*

transition flow. A flow of fluid about an airfoil that is changing from laminar flow to turbulent flow.

transitory target. A target that obtains only for a limited period of time, as in the case of a troop concentration, which may be dissipated in a short time.

translating-roller. A double-thread screw by means of which a breechblock is drawn longitudinally from its position in the breech of a large caliber gun.

TRANSMISSION, HYDRAULIC. A device designed to increase torque and/or change ratios between the drive and driven shaft or shafts by the medium of liquid under pressure within the unit. It may include a manual means for reversing rotation and changing speed ranges. Excludes crossdrive transmissions and transmissions with controlled differentials.*

TRANSMISSION, MECHANICAL. A device designed to increase, decrease and/or reverse the rotation between the drive and driven shaft or shafts. It may or may not include the shifting control mechanism which changes ratios and/or direction of rotation. Excludes cross-drive transmissions and transmissions with controlled differentials.*

transmission, toromatic. A semiautomatic transmission used on some tanks; it contains a compound planetary gear train with a torque converter.

TRANSMITTER, RUDDER POSITION, GUIDED MISSILE. A transmitter which converts mechanical energy into electrical energy for transmitting guided missile rudder position to telemetering equipment.*

TRANSMITTER, SUPERELEVATION. A device used to transmit the vertical angle required to elevate the gun bore above the line of future slant range, to overcome the effect of trajectory curvature caused by gravity.*

TRANSMITTING SET, COORDINATE DATA. A complete electronic set which accepts two or more

coordinates such as those representing a target position, and converts them into an electrical form suitable for transmission.*

transonic. Of or pertaining to transonic speed, or to the phenomena arising when an aircraft or other body passes from subsonic to supersonic speed.

transonic barrier. A so-called barrier to flight encountered by an airplane designed for subsonic speeds when it reaches transonic speed and meets the turbulence incident to diverse degrees of compressibility. Usually called 'sonic barrier.'

transonic range. The range of speeds between the speed at which one point on an airplane (or other body) reaches supersonic speed, and the speed at which all points reach supersonic speed.

The transonic range for a particular airplane depends upon its design, but it may spread for some airplanes between approximately mach .8 and mach 1.2. See: **acoustic velocity.**

transonic speed. 1. A speed at which an aircraft or other body moves relative to surrounding fluid when one or more local points on the body are moving at subsonic speed at the same time that one or more other points on the body move at sonic or supersonic speed. 2. Any one of the several speeds within the transonic range of a particular aircraft. See: **transonic range.**

transparent mirror. A reflecting surface that may be seen through, but likewise reflects an image to the eye, as in the case of a reflector plate. Cf: **reflex sight.**

transpiration cooling. See: **sweat cooling.**

transponder. Those components of IFF equipment which receive challenges and transmit replies; also used with guided missiles to check out command signals and aid in tracking.

The transponder works in conjunction with the interrogator-responder, and enables the determination of bearing or range, or of both. It consists of a receiver, which receives the signal impulses, and a responder (or transmitter) that returns signal impulses to the interrogator-responder.

transponder beacon. A responder beacon of a transponder.

TRANSPONDER SET. A complete electronic set designed to receive an interrogation signal, and which retransmits coded signals which can be interpreted by the interrogating station. It may also utilize the received signal for actuation of additional equipment, such as local indicators, servo amplifiers, and the like.*

transport vehicle. Vehicle primarily intended for personnel and cargo carrying, excluding combat vehicle.

transport wagon. Towed vehicle, containing a front and rear axle, used to transport sections of heavy pieces of artillery. Each wagon is designed and built with special fittings to carry a specialized load. Cf: **LIMBER.**

trap. That part of a ROCKET MOTOR that keeps the propellant grain in place.

trap mine. Land mine designed to explode unexpectedly when enemy personnel attempt to move an object. A form of booby trap (which see).

trapped fuel. The fuel in an engine or fuel system that is not in the fuel tanks.

TRAP, TARGET SHOOTING. A spring operated device for hurling 'clay pigeon' moving targets through space for shooting practice. The spring is set manually but may be released either manually or by means of an electric timer. The degree of train, or elevation, may be fixed or adjustable.*

Trauzl test. A test to determine the relative disruptive power of explosives. In the test a standard quantity of explosive (10 grams) is placed in a cavity in a lead block and exploded. The resulting volume of cavity in the block is compared with the volume produced under the same conditions by a standard explosive, usually TNT.

traveling charge. See: **charge, traveling.**

traveling position. Position of a weapon when ready for traveling, as opposed to **firing position.**

travel of projectile in the bore. Distance traveled by the projectile to the muzzle.

In the case of projectiles with rotating bands the distance is taken from the rear face of the rear band to the muzzle.

traverse. 1. Movement to right or left on a pivot or mount, as of a gun, launcher or radar antenna. 2. To move or point a gun, launcher, radar antenna, or the like to the right or left on its pivot. 3. In surveying or navigation, a series of straight lines running from point to point, the distances and angles being accurately known.

traversing mechanism. Mechanism by which a gun or other device can be turned in a horizontal plane.

T-R box. See: **DUPLEXER.** Common abbreviation for transmit-receive switch or tube. This switch or tube, permits the use of a single antenna on a radar for transmission and reception. The T-R box prevents the absorption of the transmitted pulse into the receiver system, thereby protecting the receiver circuit from damage, and also prevents the transmitter circuits from absorbing any appreciable fraction of the reflected echo signal. There are various types of T-R boxes, or tubes, graduating to fairly complex devices in microwave systems.

tread. 1. That part of a foot, wheel, tire, or gear that has contact with the surface as it moves. 2. The mark or marks made by this contact.

trekometer. A field range finder used in the British service.

trench knife. Knife with a double-edged steel blade about eight inches long, used in close combat.

trepanning. The action of cutting a section from the casing of an unexploded munition so as to permit defuzing it.

triacetin. Nonexplosive gelatinizing agent used as a constituent of double base propellants. See: **gelatinizing agent.**

trial. An action or process by which some piece of equipment is tested. See: test (senses 1 and 2).

trial fire. Deliberate gunfire laid on a fixed point or target to determine the corrections for firing data. Trial fire is used to prepare for fire for effect. See: registration fire.

trial shot. Shot fired during trial fire.

trial shot point. Fixed point at which trial fire is directed.

triangulation. A method of finding a position or location by means of taking bearings with reference to two fixed points a known distance apart, thus obtaining the values of one side and all the angles of a triangle, from which the position can be computed.

triangulation station. A permanently marked point whose coordinates are accurately known from the precise surveys, such as those of the U. S. Coast and Geodetic Survey.

trick. Graduation mark on a lens or reticle.

tridite. Mixture of 80 percent trinitrophenol (picric acid) and 20 percent dinitrophenol. May be used as an emergency high explosive for projectile or bomb filling.

trigger. 1. A mechanism which when pulled, as with the finger, releases another mechanism, as in the trigger of a gun; likewise, a mechanism which when pressed does the same thing, as in the trigger on a control stick used to fire a gun. 2. Also anything which when made or moved starts an immediate reaction, as in 'the radar echo served as a trigger to detonate the fuze.' Hence, *trigger, v.*

trigger actuator. See: actuator.

trigger bomb. See: bomb, trigger.

trigger, electrical. A mechanism to provide for remote control of the electric gun firing solenoid for automatic guns.

trigger fork. That part of a firing lock which bears against the firing pin holder sleeve and is engaged to the trigger shaft so that rotation of the latter part causes the fork to force the sleeve forward and compress the firing spring.

trigger motor. An electric motor on certain types of automatic weapons that operates the sear mechanism for rapid fire.

trigger pull. Resistance offered by the trigger of a rifle or other weapon; force which must be exerted to pull the trigger. Usually expressed in pounds.

trigger pulse. An electronic impulse that starts a train of events, as in a proximity fuze.

trigger shaft. The shaft which passes transversely through the breechblock and firing lock, and whose arm is actuated by the firing mechanism. Movement of the arm rotates the shaft and thus imparts movement to the trigger fork of the firing lock.

trigger squeeze. Method of firing a rifle or similar weapon in which the trigger is not pulled, but squeezed gradually by an independent action of the forefinger.

trigonometric leveling. A method of determining the difference of elevation between two points, by using the principles of triangulation and trigonometric calculations.

trim. 1. In electronics, denotes a small change or necessary adjustment of the tuning capacity. 2. Concerning aircraft, the attitude about all three axes at which balance occurs in rectilinear flight with free controls.

trimonite. High explosive used as a substitute for trinitrotoluene as a bursting charge. Trimonite is a mixture of picric acid and mononitronaphthalene.

trinitrophenol. (TNP) See: picric acid.

trinitrotoluene. (TNT) High explosive widely used as explosive filler in munitions and by engineers; trinitrotoluol; TNT.

trinitrotoluol. (TNT) See: trinitrotoluene.

Trinity bomb. The Alamogordo bomb.

trip. 1. Part of the mechanism of some firearms, released by the action of the trigger. 2. To release a lever or set free a mechanism.

triple base propellant. Propellant (which see) with three principal active ingredients, such as nitrocellulose, nitroglycerin, and nitroguanidine.

triplet. Three radio facilities operated as a group for the determination of positions.

TRIPOD, AIMING CIRCLE. A device with three vertically adjustable or nonadjustable legs, hinged or permanently affixed to a mounting plate, head, or vertical spindle designed to support an AIMING CIRCLE.*

tripod mount. Three-legged base for a machine gun, weapon or instrument. See: MOUNT, TRIPOD, WEAPON.

trip-wire. 1. Wire stretched near the ground to trip foot troops. 2. Wire attached to an antitank or antipersonnel mine; movement of the wire may cause detonation of the mine.

tritium. An isotope of hydrogen of mass number 3 (symbol H^3 or T); a heavy hydrogen.

Triton. Name applied to a surface-to-surface, long range, supersonic missile, suitable for launching from submarines. Being developed by the Navy.

tritonol. An explosive composed of 80 percent TNT and 20 percent powdered aluminum. Developed and standardized in the United States during World War II. Can be melt loaded and is used in bombs for its blast effect.

triton block. Block of pressed TNT, used for demolition purposes. See: trinitrotoluene.

trk (abbr). 'Truck.'

troop test. See: user test.

tropopause. The boundary or zone of transition between the troposphere and the stratosphere. Its height is variable; it is highest, about 17-18 kilometers, over the Equator, and lowest, about 6-8 kilometers, over the Poles. Its height also changes with the seasons and with the passage of cyclones and anticyclones. The temperature at the tropopause

ranges from approximately -55°C over the Poles to about -75°C over the Equator.

troposphere. The region of the atmosphere extending from the surface of the earth up to the tropopause; characterized by convective air movements and a pronounced vertical temperature gradient, in contrast to the convectionless and almost vertically isothermal stratosphere above the tropopause.

trt (*abbr.*). 'Turret.'

truck. 1. *Automotive.* A self-propelled wheeled vehicle designed primarily to transport supplies and/or equipment and which may be used to tow trailers or other mobile equipment. Excludes TRUCK TRACTOR.* 2. Target designation term, used by tank commanders to designate any unarmored vehicle.

TRUCK, AIRCRAFT BOMB. A hand propelled vehicle designed to transport aircraft bombs. May include adapters for transporting rockets and/or miscellaneous items.*

TRUCK, ARMORED. A truck with a panel type body having armored inner panels and bullet resistant glass. Designed for the safeguarding of money and/or valuables while in transit. Excludes CAR, ARMORED.*

TRUCK, BOMB SERVICE. A truck, usually with a platform or cargo type body, equipped with a monorail mounting hoist or hydraulic lifting boom, designed to lift and/or transport bombs.*

TRUCK, CARGO. A truck with either a box type body or a body having integral sides and front panel. Usually with a flat loading platform, tailgate, removable top bows and tarpaulin.*

TRUCK, COMMAND RECONNAISSANCE. A truck equipped with an open body, fabric top and automobile type seats designed specifically to transport command and reconnaissance personnel in the field.*

TRUCK, DOLLY. A low truck with one or more wheels, rollers, or casters, having either an open or solid platform for moving heavy objects. It does not have superstructure, handles, tongues, stakes, or the like. It may have provisions to permit it to be pulled.*

TRUCK, FLAT BED. A truck with a flat load carrying platform, without sides and tail gate. It may include equipment such as A-frame and boom to facilitate the loading of heavy construction equipment, pipe, poles and the like on the truck platform.*

TRUCK, GUIDED MISSILE BODY SECTION. A hand propelled wheeled vehicle designed to transport the body section of a guided missile.*

TRUCK, GUIDED MISSILE ELECTRONIC SHELF. A hand propelled wheeled vehicle designed for transporting a guided missile electronic shelf before installing.*

TRUCK, GUIDED MISSILE JATO UNIT. See: TRUCK, GUIDED MISSILE ROCKET MOTOR.

TRUCK, GUIDED MISSILE NOSE SECTION. A hand propelled wheeled vehicle designed to transport the nose section of a guided missile.*

TRUCK, GUIDED MISSILE ROCKET MOTOR. A

hand-propelled wheeled vehicle designed to transport the ROCKET MOTOR of a guided missile.*

TRUCK, GUIDED MISSILE TAIL SECTION. A hand propelled wheeled vehicle designed to transport the tail section of a guided missile.*

TRUCK, GUIDED MISSILE TEST SET. A hand-propelled wheeled vehicle designed to transport a TEST SET, GUIDED MISSILE in and around a guided missile launching area. It may have provisions to permit it to be towed.*

TRUCK, GUN LIFTING. A truck equipped with hydraulic operated lifting boom, designed to be used with another vehicle of similar design to lift and transport heavy artillery.*

TRUCK, GUN TRAIL. A hand propelled wheeled vehicle designed to carry the trail of a gun while in the process of being loaded or unloaded from aircraft.*

TRUCK, HAND, PLATFORM. A hand propelled vehicle with four or more wheels. It has a fixed platform with stakes and/or handles.*

TRUCK, HAND, TWO WHEELED. A truck having two wheels at one end, and one or two handles at the other end. It has a steel or iron nose attached at the wheel end of the frame for use in picking up and supporting the load.*

TRUCK, INERT GUIDED MISSILE. A bolster type, hand propelled, wheeled vehicle capable of being towed and used to transport a guided missile, less warhead and propellants. May be equipped with both front and rear wheel steering and/or locking device(s) for maneuverability within a shop area. It includes missile handling rings and is specifically designed to permit rotation of the missile body for maintenance and inspection purposes.*

TRUCK, LIFT, BATTERY. A hand-propelled wheeled vehicle equipped with either a mechanical or hydraulic lifting device for installing, removing and transporting storage batteries.*

TRUCK, LIFT, FORK. A self-propelled or manually-propelled wheeled vehicle equipped with a power-driven fork type elevating unit(s). It is primarily used for lifting, transporting, and stacking material. May have load platform(s).*

TRUCK, LIFT, PLATFORM. A self-powered wheeled vehicle, equipped with a power-driven platform type elevating unit. It is primarily used for lifting, stacking and transporting material.*

TRUCK, MAINTENANCE. A truck equipped with a body specifically designed to house and/or transport tools, equipment and/or supplies for telephone and electric-line construction; setting poles or for electrical telephone, refrigeration, Ordnance repairs or the like. The body may be compartmented. May include earth auger and/or derrick. Excludes items complete with the repair equipment and supplies.*

TRUCK, MULTISTOP DELIVERY. A truck with a panel type body having an integral cab with full length doors enabling operator to enter and exit in an erect position, designed for door to door delivery.*

TRUCK, PANEL. A truck with a cab integral with a fully inclosed body usually having a flat bed and rear loading door(s).*

TRUCK, PROPELLANT SERVICING, GUIDED MISSILE. A truck equipped with a body specifically designed to mount liquid propellant tanks, for transporting and servicing guided missiles. Excludes **TRUCK, TANK**.*

TRUCK, ROCKET. A hand-propelled wheeled vehicle designed to transport a rocket.*

TRUCK, STAKE. A truck with a body having readily removable stakes which may be tied together with chains, flats, panels and the like. May include a tailgate or loading ramp.*

TRUCK, STRADDLE-CARRY. A self-powered wheeled vehicle with a gantry type frame designed to straddle, pick up, and transport material.*

TRUCK, TANK. A truck with a tank body designed for transporting water, gasoline, oil or other liquids. May include facilities for dispensing but excludes trucks with integral spray bars.*

TRUCK, TORPEDO HANDLING. A flat bed truck equipped with torpedo cradles and a revolving crane designed for lifting and transporting torpedoes.*

TRUCK TRACTOR. A self-propelled wheeled vehicle designed to tow and partially support a semi-trailer by means of a fifth wheel-type coupler.*

TRUCK, UTILITY. A truck with an open body, usually with a fabric top and usually equipped with removable seat(s) transverse to its longitudinal axis, designed to transport light cargo.*

TRUCK, VAN. A truck with a cab not integral with the inclosed body, designed to protect cargo and equipment from the elements, pilferage and/or to provide working quarters for personnel. It may be insulated, have windows, lighting and/or ventilation.*

TRUCK, WRECKER. A truck designed primarily for the recovery of disabled vehicles and mechanized equipment.*

true. 1. Determined by reference to a line between the observer and the earth's axis, esp. the axis at the North Pole, as in *true bearing, true direction*, etc. 2. Conformable to a defined set of standards. 3. Corrected for error, as in *true airspeed, true altitude*.

true airspeed. (TAS) The actual speed of an aircraft relative to the air through which it flies, i.e., the calibrated airspeed corrected for temperature, density, or compressibility.

true azimuth. (Zn) Azimuth measured by an angle from **true north**.

true bearing. A bearing measured by an angle from **true north**.

true course. (TC) A course indicated by an angle measured clockwise from **true north**.

true heading. (TH) A heading measured with respect to **true north**.

true homing. The process of following a course such that the true bearing of a vehicle as seen from an objective is held constant.

true north. The direction of the North Pole from the observer; a line showing this direction.

truncate. *Electronic computers.* To drop digits of a number of terms of a series thus lessening precision, e.g., the number 3.14159265 is truncated to five figures in 3.1415, whereas one may round off to 3.1416.

trunnion. 1. On of the two pivots supporting a piece of artillery on its carriage and forming the horizontal axis about which the piece rotates when it is elevated. 2. One of the two supporting pivots for holding an instrument on its mount.

trunnion band. A metal band provided with trunnions, the band being bolted about some object, esp. about an aerial bomb that requires being swung down to clear an obstacle on release from an airplane.

trunnion bearing. See: **trunnion support**.

trunnion ledge. A small shelf on the trunnion of a heavy cannon.

trunnion support. Supporting pivot for holding a piece of artillery on its carriage and forming the horizontal axis about which the barrel rotates when it is elevated; **trunnion bearing**.

TS (*abbr.*). 'Top Secret.'

TSQ (*abbr.*). 'Time and superquick.'

tube. Main part of a gun, the cylindrical piece of metal surrounding the bore. Tube is frequently used in referring to artillery weapons, and barrel is more frequently used in referring to small arms. See: **barrel**.

tube accuracy life. See: **accuracy life**.

tube, burster. Tube that holds the explosive charge of a burster (which see) in **chemical ammunition** (also see).

TUBE, CANNON. A cylindrical metallic item which is that part of a cannon which controls the initial direction of the projectile. The bore may be rifled and must have a diameter of 37 millimeters or larger. See also: **TUBE, SUBCALIBER, CANNON** and **BARREL, GUN**.*

TUBE, EXTENSION, BORESCOPE. A corrosion-resisting tubular item with circular graduations in units of linear measurements engraved on the periphery. It is also engraved the full length with longitudinal line for the purpose of indexing the **BORESCOPE**. It is specifically designed to extend the range of the basic device to cover the various weapon lengths.*

TUBE, SUBCALIBER, CANNON. A cylindrical metallic item which is mounted in the chamber of the parent weapon and may extend into the bore. It is used to reduce the caliber of larger weapons. See also: **TUBE, CANNON** and **BARREL, GUN**.*

tubular box trail. See: **box trail**.

tumbling. 1. Concerning missiles and projectiles in flight, turning end-over-end about the transverse missile axis. 2. The act performed by a two-frame free gyroscope when both frames become co-planar. Under these circumstances, the gyro wheel rotates

- about a diameter as well as about its polar axis, resulting in loss of control.
- TUNER, WAVEGUIDE.** An item designed to be inserted in a waveguide and which can be controlled to electrically increase or decrease its dimensions so as to minimize the standing wave ratio.*
- tungsten carbide core.** The heavy, hard core used in hypervelocity armor-piercing type projectiles.
- tunnel.** 1. Short for 'wind tunnel.' 2. A tunnel-shaped space or inclosure within an airplane, missile, or automotive vehicle.
- tunnel gun.** A gun mounted inside an airplane fuselage and firing through an aperture.
- TUNNEL SECTION, GUIDED MISSILE.** A tunnel-shaped item with integral mounting brackets, designed to cover and protect electrical cable(s), air and/or fuel line(s) mounted on the external surface of a guided missile.*
- turbojet.** Short for 'turbojet engine,' esp. in combinations, as in *turbojet fighter*.
- turbojet engine.** See: **ENGINE, TURBO-JET.**
- turbosupercharger.** A centrifugal air compressor, gas turbine driven, usually used to increase induction system pressure in an internal combustion reciprocating engine.*
- turbulence.** A condition in the airflow about a wing or other airfoil in which different velocities and pressures are laterally mixed between layers of the airflow.
- turbulent boundary layer.** A condition in the boundary layer when the laminar flow breaks down or when random lateral movement is superimposed on the laminar flow.
- turn-and-bank indicator.** See: **INDICATOR, TURN AND SLIP.**
- turnover.** In supply operations, relationship between the rate at which an item is shipped and the quantity on hand.
- turret.** (trt) Dome-shaped or cylindrical armored structure containing one or more guns located on forts, warships, airplanes, and tanks. Most turrets are built so that they can be removed.
- turret, ball.** A turret in the shape of a ball. For example, designed to project or to be let down from the belly of an airplane, and to house the gunner. The ball turret, having guns mounted in it, rotates as the gunner brings his guns to bear. See also: **TURRET, MACHINE GUN, AIRCRAFT.**
- turret deflade.** Condition in which a tank, including its turret, is hidden from the enemy by an intervening hill or other mask.
- turret gun.** Gun mounted in a turret.
- TURRET, MACHINE GUN, AIRCRAFT.** An armored inclosure installed in an aircraft for housing the armament and related accessories. It is designed to rotate about one or more axes permitting positioning and firing of the machine gun(s) in a number of directions or angles.*
- turret mount.** Mount for a gun placed in a turret. See also: **MOUNT, GUN.**
- turret traversing mechanism.** Device for revolving a turret.
- twenty-five percent rectangle.** A rectangle inclosing the center of dispersion or impact within which twenty-five percent of all shots fired with the same setting will fall. It is the rectangle formed by the intersection of the fifty-percent zone for deflection and the fifty-percent zone for range. See: **fifty-percent zone.**
- Twin Cities Arsenal.** Ordnance Corps field installation, located at Minneapolis, Minnesota.
- twin ignition.** See: **dual ignition.**
- twist, increasing.** Rifling in which the degree of twist increases from the origin of rifling to the muzzle; gain-twist; gaining twist. See: **rifling.**
- twist, left hand.** Rifling in which the twist is such as to impart a left hand rotation to the projectile when viewed from the origin. See: **rifling.**
- twist (of rifling).** Inclination of the spiral grooves (rifling) to the axis of the bore of a weapon. It is expressed as the number of calibers of length in which the rifling makes one complete turn. See: **rifling.**
- twist, right hand.** Rifling in which the twist is such as to impart a right hand rotation to the projectile when viewed from the origin. See: **rifling.**
- twist, uniform.** Rifling in which the degree of twist is constant from the origin of rifling to the muzzle, the path of the groove being a uniform spiral. See: **rifling.**
- twist, zero.** Rifling with no twist. Some designs have this condition at the origin of rifling for guns with increasing twist rifling. See: **rifling.**
- two-cycle engine.** See: **two-stroke-cycle engine.**
- two-dimensional flow.** See: **flow, two-dimensional.**
- two-station method.** See: **horizontal base line method.**
- two-stroke-cycle engine.** A reciprocating internal combustion engine that completes the events of a cycle in two strokes of the piston(s), i.e., one complete revolution of the crankshaft. Each upward stroke of the piston includes a compression event, and each downward stroke includes a combustion (power) event. Arrangements differ, but in general, exhaust valve(s) or port(s) are caused to open near the end of the power stroke, and the intake valve(s) or port(s) admit air or air-fuel mixture under pressure, thus eliminating separate exhaust and intake strokes used in **four-stroke-cycle engine(s)**. Scavenging of exhaust gases and charging with fresh air or mixture are generally less efficient than for four-stroke cycle engines, particularly at higher speeds. Use is usually restricted to low horsepower applications; e.g., some auxiliary power units.
- type classification.** Designations made by technical committee action to record the status of items of materiel from the standpoint of development and suitability for service use. Those designations and their definitions are as follows:
- a. *Development type.* Used to designate an item being developed to meet a military requirement.

This category is further classified in the Ordnance Corps as follows:

(1) *Experimental type.* Materiel that is being developed or modified to meet approved military characteristics or to improve design or function.

(2) *Service test type.* Materiel which has performed satisfactorily in engineering tests and is authorized to be procured in limited quantity for user test, which see.

b. *Adopted type.* Used to designate an item which has been found suitable for its intended military purpose and which has been type classified. This category is further classified as follows:

(1) *Standard type.* Designates the most advanced and satisfactory item or assemblage that has been adopted and is preferred for procurement.

(2) *Substitute standard type.* Designates an item or assemblage which is not so satisfactory as the standard type, but is a usable substitute therefor. It may be procured to supplement the supply of the standard type.

(3) *Limited standard type.* Designates an item or assemblage that is less satisfactory than the standard and substitute standard type but which is acceptable and may be used until the supply is exhausted.

c. *Obsolete type.* Designates an item or assemblage which has been declared unsuitable for military use.

U

- UAM** (*abbr.*). 'Underwater-to-air missile.'
- UDMH** (*abbr.*). 'Unsymmetrical dimethylhydrazine.'
- UDT** (*abbr.*). 'Underwater demolition team.'
- UDU** (*abbr.*). 'Underwater demolition unit.'
- UF** (*abbr.*). 'Unit of fire.'
- UFO** (*abbr.*). 'Unidentified flying object.'
- UHF** (*abbr.*). 'Ultrahigh frequency.'
- ullage**. Outage, which see.
- ultimate weapon**. See: **absolute weapon**.
- ultrahigh frequency**. (UHF) See: **frequency, electronic**.
- ultrasonic**. Of or pertaining to frequencies above those that affect the human ear, i.e., more than 20,000 vibrations per second.
Use of this term in acoustics reserves 'supersonic' for use in aerodynamics.
- ultrasonics**. That branch of acoustics dealing with ultrasonic frequencies.
- ultraviolet**. Outside the visible spectrum at the violet end; higher in frequency than visible light. The opposite of 'infrared.' Said of light, rays, frequencies, hence 'ultraviolet light.'
- Umatilla Ordnance Depot**. Ordnance Corps field installation, located at Ordnance, Oregon.
- umbilical cord**. A cable fitted with a quick-disconnect plug at the missile end, through which missile equipment is controlled and tested while the missile is still attached to the launching equipment or parent plane.
- unarmed**. The condition of a fuze (or other firing device) in which the necessary steps to put in condition to function have not taken place. It is the condition of the fuze when it is safe for handling, storage, and transportation. The fuze is 'partially armed' if some, but not all, of the steps have taken place.
- unauthorized item**. In supply usage, an item not authorized for storage and issue by appropriate tables of allowances.
- unclas** (*abbr.*). 'Unclassified.'
- unclassified**. (unclas) *Specif.* Not having a security classification. Said of documents, information, lectures, equipment, etc. Cf: **classified military information**.
- unconventional warfare**. (UW) 1. Warfare conducted, at least in part, with atomic, chemical, or bacteriological weapons. 2. Warfare conducted by the use of personnel, techniques, and tactics not normally employed by a regular military force, e.g., in the use and direction of guerrilla fighters not usually in uniform, in the development of evasion and escape procedures and mechanisms, or in the employment of subversive action against hostile states or groups.
- undercarriage**. Fixed or movable base on which the top carriage of a weapon moves.
- underspin**. Insufficient rate of spin for a projectile to give it proper stabilization. Such a projectile is said to have 'underspin' or 'understabilization.' Cf: **stabilization**.
- underwater demolition**. Destruction or neutralization of underwater obstacles (near a landing beach) which can affect the approach of landing craft. The destruction is normally accomplished by an **underwater demolition team** (which see).
- underwater demolition team**. (UDT) Naval unit organized and equipped to perform beach reconnaissance and **underwater demolition** (which see) in an amphibious operation.
- underwater obstacle**. Natural or artificial obstacle located to seaward of the highwater line, and wholly or partly submerged, which acts as a barrier or obstruction to the passage of ships, landing ships, craft, vehicles, or torpedoes. See: **beach obstacle**.
- underwater ordnance**. Munitions designed for use under water, e.g., torpedo; MINE, UNDERWATER; depth charge; etc.
- unequal section charge**. See: **charge, unequal section**.
- unexploded bomb**. (UXB) See: **bomb, unexploded**.
- unguided**. Of a missile or other object sent through the air: Not subject to guidance or control during flight; aimed only in launching. Cf: **guided**.
- unidentified flying object**. (UFO) Name given to any reported flying object which cannot be identified. Cf: **flying saucer**.
- uniform twist**. See: **rifing; twist, uniform**.
- unilateral observation**. Observation of fire from one station only.
- unilateral tolerance method**. Method of dimensioning and tolerancing wherein the tolerance is taken all plus or minus from an explicitly stated dimension. The dimension shall represent the size or location which is nearest the critical condition (i.e., maximum material condition), and the tolerance is applied either in a plus or minus direction, but not in both directions, in such a way that the permissible variation in size or location will be away from the critical condition. Cf: **bilateral tolerance method**.
- unit assembly**. Assemblage of machine parts which constitutes a complete auxiliary part of an end item, and which performs a specific auxiliary function, and which may be removed from the parent item without itself being disassembled.
- United States Air Force**. (USAF) Official name given the air arm of the United States military forces.
According to the *Air Force Organization Act of 1951*, the USAF 'shall consist of the Regular Air

Force, the Air Force Reserve, the Air National Guard of the United States and the Air National Guard while in the service of the United States.'

United States Armed Forces. *Specif.* Collectively, the regular components only of the Army, Navy (including the Marine Corps), Air Force, and Coast Guard.

This term is distinguished from the **Armed Forces of the United States** (which see).

United States Army. (USA) The land military forces of the US, including the Regular Army, the National Guard of the United States, and the Army Reserve. Often shortened to 'Army.'

In general the United States Army shall include land combat and service forces and such aviation and water transport as may be organic therein. It shall be organized, trained, and equipped primarily for prompt and sustained combat incident to operations on land.

United States Marine Corps. (USMC) A corps of soldiers in the U. S. Navy. Also shortened to 'Marine Corps.'

The USMC includes land combat and service forces and organic aviation units. It is responsible for service with the fleet in the seizure or defense of advanced naval bases and for the conduct of such land operations as may be essential to the prosecution of a naval campaign.

United States Navy. (USN) The Naval Establishment of the United States. Often shortened to 'Navy.'

The Navy includes sea-going fleets, aviation units, the U. S. Coast Guard when operating as a part of the Navy under the provisions of law, and the U. S. Marine Corps.

In general the United States Navy shall include naval combat and service forces and such aviation as may be organic therein. It shall be organized, trained, and equipped primarily for prompt and sustained combat incident to operations at sea.

unitized load. A single item, or a number of items packaged, packed, or arranged in a specified manner and capable of being handled as a unit. Unitization may be accomplished by placing the item or items in a container, or by banding them securely together. A unitized load when placed on a pallet and fastened thereto, may further be referred to as a palletized load.

unit of error. Arbitrary measure, based on a mathematical formula, used to state the accuracy of a range finder.

unit of fire. (UF) A basic load of ammunition.

unit of issue. Standard or basic quantity in which an item of supply is issued.

unit package. In supply usage, a box, bundle, reel, drum, bottle, bale, roll, or the like containing one or more identical units of manufacture and conforming to applicable packaging directives or to standard commercial packaging practice.

unit procurement cost. The net basic cost paid or estimated to be paid for a unit of a particular item including, where applicable, the cost of Government

furnished property and the cost of manufacturing operations performed at Government-owned facilities.

unit replacement. Method of repair in which a defective, worn, or damaged group of parts of a weapon or other equipment is replaced by a complete new group of parts.

UNIVERSAL JOINT. A flexible connection which permits rotary motion to be transmitted between two shafts located at an angle to each other. The angle between the shafts may be continually varied within certain limits; the connecting ends must have either a flange, hub or splined stub shaft; the plain portion of a splined stub shaft must not exceed the length of the splines.*

unrestricted war. A war in which the contestants recognize no conventions or restrictions in their use of weapons. See: war.

unseen fire. Fire which is continuously aimed at the future position of an aircraft, the aim being derived from radar sources.

unsprung weight. See: sprung and unsprung weight.

unthickened fuel. Blend of gasoline and light fuel oils or lubricating oils (without thickener) used as an incendiary fuel in portable flame throwers. See also: **CHEMICAL AGENT, INCENDIARY OIL; thickened fuel.**

upgrade. To assign a higher classification than that previously assigned. Notification to holders of the material is part of the process.

uranium. A radioactive, nuclear-fissionable element found chiefly in pitchblende.

The symbol for uranium is U; its atomic weight is 238.07 and its atomic number is 92. Three isotopes of uranium have been isolated: *U238*, which constitutes about 99.3 percent of natural uranium, *U235*, which constitutes 0.7 percent, and *U234*, which is present in natural uranium in minute amount. *U235* may be made to undergo rapid fission (see: **critical mass**); *U238* may be converted to neptunium by neutron bombardment. See: **plutonium.**

US (*abbr.*). 'United States (of America).'

USA (*abbr.*). 'United States Army.'

usable rate of fire. Normal rate of fire of a gun in actual use, measured in units of shots per minute. The usable rate of fire is considerably less than a gun's maximum rate of fire, which is a theoretical value based on the purely mechanical operation of a weapon.

USAF (*abbr.*). 'United States Air Force.'

USAOMC (*abbr.*). 'U. S. Army Ordnance Missile Command.'

U. S. Army Ordnance Missile Command. (USAOMC) Army command under the direction of the Chief of Ordnance, responsible for control and coordination of all missile activities of the Army. The headquarters is located at Redstone Arsenal, Alabama. Subordinate units include the Army Ballistic Missile Agency, the Army Rocket and Guided Missile Agency, and the White Sands Missile Range.

USCG (*abbr.*). 'United States Coast Guard.'

user test. An evaluation test conducted on materiel under development following satisfactory **engineering test** (which see). It is performed by the using agency to determine the suitability of the developmental materiel for military use. User tests are of two types:

1. *Service test.* A test under simulated operational conditions to determine to what degree the item meets the military requirement as expressed in the military characteristics.

2. *Troop test.* A test where a troop unit, equipped with appropriate numbers of the item, operates under actual or simulated field conditions to test the suitability of the item and also the adequacy

of the organization, doctrine, technique, training, and logistic support required for its use.

using agency. Any element of the Armed Forces having command or service functions, and requiring materiel for use in performance of its mission.

USM (*abbr.*). 'Underwater-to-surface missile.'

USMC (*abbr.*). 'United States Marine Corps.'

USN (*abbr.*). 'United States Navy.'

U. S. Standard Atmosphere. See: **Standard Atmosphere.**

UUM (*abbr.*). 'Underwater-to-underwater missile.'

UW (*abbr.*). 1. 'Unconventional warfare.' 2. 'Underwater.'

UXB (*abbr.*). 'Unexploded bomb.'

V-1. [Abbr. of German *Vergeltungswaffe eins* Revenge Weapon One.] A German robot bomb provided with wings, a horizontal stabilizer, a vertical stabilizer, rudder and elevators, used in WW II. Also called the 'FZG-76' by the Germans, and the 'buzz bomb' by the British.

The V-1, first landed across the English Channel on 13 June 1944, was powered by a pulsejet engine mounted on its back. Its overall length was 25 feet 4 inches, and its greatest diameter was 2 feet 7 inches. This missile was provided with complicated control devices, kept on course by an automatic pilot. It had a speed of about 360 mph and a range of 150 miles, and flew at a height between 2,000 and 3,000 feet. Some 2,000 of these robot bombs were directed against England in WW II, most of them against London.

V-2. [Abbr. of German *Vergeltungswaffe zwei*. See preceding entry.] A large German liquid-fuel rocket, developed as a ballistic missile in WW II. Also called the 'A-4' by the Germans.

The V-2, first launched against England on 8 September 1944, developed 60,000 pounds of thrust from its rocket engine. From nose to exhaust tail, it measured 46 feet, and its diameter was about 5 feet. Shaped like an artillery projectile, it was without wings, but was subject to some guidance through movable panels built into the four tail fins and through graphite vanes extending into the exhaust stream. Launched vertically, it quickly reached a speed of 3,600 mph, then was tilted in the direction of its target. It exhausted its fuel supply of 9 tons in 60 seconds, but reached an altitude of 60 miles with a range of 200 miles, and plunged earthward at about 1,500 mph. Some 1,115 V-2's were sent across the Channel in the last months of WW II.

vacuum stability test. See: **heat tests.**

validation. The process of determining the extent to which a test or other variable measures what it is supposed to measure. The correlation of the variable with a criterion is usually the method used.

validity, technical. Factual soundness based upon prescribed policies and known local factors and requirements.

VALVE, POPPET, ENGINE. A mushroom or tulip shaped valve having a circular head with a conical face and an extended stem used to regulate the flow of incoming fuel-air mixture or air into the combustion chamber or exhaust gases from the combustion chamber of a reciprocating internal combustion engine.*

VALVE, PRESSURE, GAS BOMB. A metallic device specifically designed to permit the measuring of pressure in a GAS BOMB. It is assembled within the bomb body, with a partial projection to permit

opening of the valve. A gage is then attached to obtain a pressure reading. The valve is not spring loaded and design does not permit variation of pressure.*

valve, solenoid. An electrically operated mechanism used to control the operation of pneumatic and/or hydraulic mechanisms in automatic weapons.

vane. 1. An arming vane for a FUZE, BOMB; rocket, and the like. 2. Lengthwise partition in a chemical projectile which makes the contained liquid rotate with the casing. This is necessary for accuracy in flight. See: **VANE, ARMING, BOMB FUZE; VANE, ROCKET ARMING DEVICE.**

VANE, ARMING, BOMB FUZE. A metallic item designed for attachment to the fuze mechanism of a bomb. The vane arms the fuze through action of the air stream created by falling of the bomb.*

VANE, ROCKET ARMING DEVICE. A metallic item designed to activate an arming device of a rocket by action of the air stream incident to its flight.*

Vanguard. Name given to project involving earth satellites during the International Geophysical Year. The project was under the control of the U. S. Naval Research Laboratory.

The Vanguard vehicle was 72 feet tall, maximum diameter 45 inches. The first stage was a modified **Viking**, the second stage resembled the **Aerobee**, both liquid propelled, and the third stage was solid rocket propelled. Vanguard I was launched March 26, 1958, with a 21.5 pound earth satellite payload, the second US satellite.

vapor lock. A stoppage or diminution in the fuel flow of an engine caused by fuel vapor accumulating in the fuel lines.

VAR (abbr). 'Vertical aircraft rocket.'

variable recoil. Recoil system which varies the length of recoil according to the elevation in such manner as to prevent the gun from striking the ground when fired at high angles. Cf: **constant recoil.**

variable time fuze. See: **FUZE, PROXIMITY.**

variation. Angular difference between magnetic north and true north measured east or west from true north. See: **declination.**

varistor. A special type of resistor which varies considerably with temperature; useful in making temperature measurements or in compensating circuits for other temperature effects.

VARNISH, OIL. A liquid composition of drying oil(s) and resin which is converted to a transparent or translucent hard film after application as a thin layer. It dries and sets by evaporation, oxidation

and polymerization. Excludes bituminous base items. See also: LACQUER; PAINT (as modified) and ENAMEL.*

V-BLOCK. A fixture of cast iron or steel, precision ground, having one or more V grooves machined parallel and squared with respect to the bottom, top, and ends. The block may have milled grooves on the sides to accommodate clamps which are used for holding cylindrical work.*

V-bomb. Either the V-1 or the V-2.

VCP (abbr). 'Vehicle collecting point.'

VDP (abbr). 'Vehicle deadlined for parts.'

vector. 1. An entity which has both magnitude and direction, such as a force or velocity; a line segment that represents this entity. 2. *Specif.* The translation of an object, such as an airplane or missile, from one point to another point usually in a given interval of time. 3. The line segment or direction followed in space, or to be followed, to achieve this translation, as in 'the aircraft controller signalled the missile, which followed a vector that resulted in its intercepting the rocket.' 4. A line on a chart, or a voice communication, that indicates speed and direction to achieve this translation.

vector gunsight. A gunsight that contains a device that computes the vector required for the bullet to follow if it is to strike its target. Used esp. in firing at moving targets.

vector quantity. A quantity which requires for description both magnitude and direction, such as displacement or velocity of a particle. Cf: **scalar quantity.**

veh (abbr). 'Vehicle.'

vehicle. (veh) 1. In essence, any contrivance or medium used to carry a load from one place to another. 2. In concrete applications: a. Any conveyance for either land or air transport, as in 'the vehicles he saw were trucks, carts, and air transports.' b. In restricted (yet common) usage: A carriage or moving support on the ground only, exclusive of aircraft and exclusive of vessels, mounted on wheels, tracks, runners, rollers, or any combination of these, used to move persons or things from one place to another, as in 'he brought into play every vehicle, vessel, and aircraft.' 3. In analysis of a weapons system, that component that constitutes the carrier, as in 'the vehicle for delivery of the bomb may be a man with a suitcase, an airplane, or a ship.'

Sense 2 b is common among ground troops. The category includes amphibious vehicles.

vehicle, combat. See: **combat vehicle.**

vehicular firing. Shooting from an open or turreted vehicle.

vehicular station. *Radio.* Radio station installed in a vehicle and able to operate with the vehicle in motion.

vel (abbr). 'Velocity.'

velocity. (vel) 1. Speed (which see). 2. Speed, or rate of motion, in a given direction and in a given frame of reference.

In many contexts no distinction in meaning is to be made between 'speed' and 'velocity' (sense 1), the choice between the words being governed by a sense of association. However, 'velocity' is normally not used in reference to movements of a person or animal; instead 'speed' is used, as in 'his speed in typing' or 'his speed in the mile was less than four minutes.' This restriction tends to carry over to inanimate objects when they are associated with man, as in 'the speed of an airplane.' On the other hand, 'velocity' appears to be preferred in reference to other inanimate objects, as in 'the velocity of the wind,' or 'the velocity of a bullet,' or 'the velocity of the electrons.' But 'speed' is often used likewise in these contexts.

In sense 2, 'velocity' is used in scientific or technical contexts. In these contexts, 'speed' denotes a scalar quantity equal only to that part of velocity that comprises its magnitude; whereas 'velocity' denotes a vector quantity that includes both magnitude and direction.

velocity, characteristic. The velocity attained by exhaust gases in the throat of a rocket motor. The ratio of the product of the chamber pressure and the throat area to the mass rate of gas exhaust.

velocity, effective jet. A calculated average velocity of the exhaust gases as they leave the motor nozzle.

velocity, flame. The velocity of the flame front perpendicular to its surface, relative to the unburnt gas where it is at initial conditions; under stationary conditions of one-dimensional flow, the flame velocity is equal to the mass flow of unburnt gas through a unit area of the flame front divided by the initial density.

velocity head. See: **pressure, dynamic.**

velocity, limiting. See: **terminal velocity** (sense 1).

velocity modulation. See: **modulation, velocity.**

velocity of detonation. See: **detonation.**

VENTILATOR, VEHICLE STORAGE. A device constructed of sheet metal and designed for the express purpose of providing ventilation in a combat or special purpose vehicle which requires ventilation while in storage. It is of a fixed gravity head type.*

venturi. [After G. B. *Venturi* (1746-1822), Italian physicist.] A constriction in a tube that causes increased velocity and consequent reduction of pressure of fluid flowing through the constriction, in accordance with **Bernoulli's principle.** In hydraulics, a venturi tube connected to a manometer provides a means of measuring flow of liquids, and in aeronautics, a venturi tube placed in an airstream provides a means of obtaining suction to operate rotor-driven instruments, such as the gyroscope of an attitude indicator, where these are not electrically driven.

verification. *Electronic computers.* The process of automatically checking one data typing or recording process against another for the purpose of reducing the number of human errors in data transcription.

verification fire. Preparatory fire to test the mechanical adjustment of guns and fire control equipment, and to measure the accuracy of corrections determined by calibration and trial fire.

vertex. *Network topology.* See: **node.**

vertical deflection angle. *Fire control.* The vertical angle equal to the algebraic sum of the principal vertical deflection, and the vertical pointing correction.

Approximate vertical deflection angle. An approximation of the principal vertical deflection angle obtained by multiplying an instantaneous vertical angular velocity by a time of flight.

Principal vertical deflection. That part of the vertical deflection angle due to the change in the angular height of the target during the time of flight.

Vertical pointing correction. That part of the vertical deflection angle due to causes other than the travel of the target, such as the corrections due to wind, to muzzle velocity, to atmospheric density, and to vertical adjustment corrections.

vertical deflection setting. *Fire control.* The setting on the vertical deflection scale of the sighting mechanism of the gun, corresponding to the vertical deflection angle.

vertical deviation. In antiaircraft artillery, the distance between the target and the point of burst in the plane normal to the line of position along a line perpendicular to the lateral deviation.

vertical drop. 1. The drop of an object in trajectory or along a plumb line, measured vertically from its line of departure to the object. 2. The distance measured. Also called 'drop,' 'bullet drop,' 'gravity drop.'

vertical jump. The difference between the angle of elevation and the angle of departure. It is positive if the angle of departure is greater than the angle of elevation.

vertical launch. A launch in which the missile or vehicle starts from a vertical position.

vertical lead. The vertical angle by which the gun must be moved from the line of position in order for the trajectory to pass through the target. It is the algebraic sum of the principal vertical deflection, the vertical pointing correction, and the superelevation.

vertical pointing correction. See: **vertical deflection angle.**

vertical prediction correction. The projection of the total prediction correction on the elevation plane through the present line.

vertical probable error. The product of the range probable error and the slope of fall. Values for the range probable error and the slope of fall are given in the firing tables.

vertical stabilizer. On an airplane or other aircraft, a fixed or adjustable stabilizer having its plane parallel to the aircraft's plane of symmetry and to which commonly, a rudder is hinged.

very high frequency. (VHF) See: **frequency, electronic.**

Very light. Former terminology for a type of signal, illumination (which see).

very long-range radar. Equipment whose maximum range on a reflecting target of one square meter normal to the signal path exceeds 800 miles, provided line-of-sight exists between the target and the radar. See: **long-range radar.**

very low frequency. (VLF) See: **frequency, electronic.**

Very pistol. Former terminology for PISTOL, PYRO-TECHNIC.

very short-range radar. Equipment whose range on a reflecting target of one square meter normal to the signal path is less than 50 miles, provided line-of-sight exists between the target and the radar. See: **short-range radar.**

vesicant. Former designation for blister gas (which see).

vest, armored. See: **ARMOR, BODY, FRAGMENTATION PROTECTIVE.***

vest, flak, protective. See: **ARMOR, BODY, FRAGMENTATION PROTECTIVE.***

VHF (*abbr.*) 'Very high frequency.'

vibration meter. *Electroacoustics.* An apparatus for the measurement of displacement, velocity, or acceleration of a vibrating body.

vibrometer. Short for vibration meter (which see).

Vickers gun. Any of certain guns made or designed by Vickers' Sons and Maxim, Ltd., esp. a type of water-cooled, belt-fed machine gun of Maxim design having a distinctive corrugated water jacket, widely used during and after WW I for both air and ground purposes.

video. 1. The conversion of certain electronic impulses into wave lengths that can be seen. 2. The display or presentation of such wave lengths upon a radar or television screen. 3. Of or pertaining to the visual presentation or display on a television or radar screen, as in **video amplifier.**

This word is a coined word formed from the Latin *videre* 'to see.' Its ending, although the same as that of the Latin *video* 'I see,' is analogous to the endings of 'radio' or 'audio.'

video amplifier. A circuit capable of amplifying a very wide range of frequencies, including and exceeding the audio band of frequencies.

Viking. A large, liquid-fuel, high-altitude, research rocket, built for the U. S. Navy. First launched 3 May 1949.

violet. Indicates, in the nomenclature of a SIGNAL, SMOKE, GROUND, several smoke pellets which produce freely falling streamers of violet smoke at the height of the trajectory.

viscosimeter. See: **VISCOSIMETER, WEIGHT BALANCE; COMPARATOR, VISCOSITY, OIL.**

VISCOSIMETER, WEIGHT BALANCE. A device to determine the viscosity of various materials by measuring the speed attained by a cylinder or other

- rotor immersed in the material under the influence of a constant weight.*
- viscosity.** In a liquid, the property of internal resistance, caused by molecular attraction, that makes the liquid resist flow. See: **SAE viscosity**; **Saybolt viscosity**.
- viscosity index.** A number given to a certain lubricating oil to indicate its performance, particularly as to change of viscosity with temperature variation, as compared with the average, of two groups of test oils.
- vision slit.** Any narrow opening or slit in armor through which to look, especially one in a tank or other armored vehicle.
- visual-aural radio range.** Any radio range that sends out signals for both visual and aural reception; applied esp. to certain types of VHF radio ranges.
- visual bombing.** Bombing done by sighting on an aiming point or points, under conditions where the aiming point or points are visible from the bombing aircraft. Distinguished from **radar bombing**, which see.
- visual bombsight.** A bombsight designed for aiming a bomb when the aiming point is visible.
- visual fire control.** Technical control of some artillery fire using an optical tracking instrument.
- visual radio range.** Any range facility the course of which is flown by visual instrumentation not associated with aural reception.
- VLF (abbr).** 'Very low frequency.'
- volley.** 1. Method of artillery firing in which each piece fires the specified number of rounds without any attempt to synchronize with the other pieces.
2. Burst of fire, especially a salute fired by a detachment of riflemen.
- volley bombing.** Simultaneous or nearly simultaneous release of a number of bombs.
- volley fire.** Artillery fire in which each piece fires a specified number of rounds without regard to the other pieces and as fast as accuracy will permit. Cf: **salvo fire**.
- volume control, automatic.** See: **gain control, automatic**.
- volumetric efficiency.** The efficiency with which an internal combustion piston engine draws air or an air-fuel mixture into its cylinders.
- Volunteer Ordnance Works.** Ordnance Corps field installation, located at Chattanooga, Tennessee.
- volute spring.** See: **spring, volute**.
- vomiting gas.** Any one of a group of toxic gases, such as adamsite, that causes coughing, sneezing, sometimes vomiting, and other effects. A war gas (which see).
- VT fuze.** See: **FUZE, PROXIMITY**.
- VTOL (abbr).** 'Vertical take-off and landing.'
- Vulcan machine gun.** A very fast firing machine gun of the Gatling type. Produced in 20- and 30-mm calibers. See: **Gatling**.
- vulnerable area.** *Specif.* The product of: (1) the probability of a projectile which strikes an armored vehicle causing disabling damage, and (2) the presented area of the vehicle.
- V-weapon.** Either the V-1 or the V-2.

W

W (*abbr.*). Chemical agent, 'W.'

w (*abbr.*). 'With' (in combinations only). Often written w/.

WA (*abbr.*). 'Watertown Arsenal.'

Wabash River Ordnance Works. Ordnance Corps field installation, located at Newport, Indiana.

WAC (*abbr.*). 'Women's Army Corps.' (Pronounced as a word.)

Wac Corporal. A sounding rocket for very high altitudes, developed by the Army, propelled by liquid fuel although adapted to using a solid propellant booster.

The Wac Corporal, used as a second-stage rocket in the nose of a V-2, reached an altitude of some 250 miles on 25 Feb. 1949 at White Sands Proving Ground, New Mexico.

wad (*wadding*). A felt or cardboard pad used to secure the propellant in place in cartridges. Also used for various other purposes. See also: **distance piece**; **distance wadding**.

WADC (*abbr.*). 'Wright Air Development Center.'

wad cutter. Bullet designed for target shooting, shaped to cut a clean hole in a paper target.

wagon, cannon transport. See: **TRAILER, CANNON.***

wagon, carriage transport. See: **TRAILER, GUN CARRIAGE.***

wallow course. Wide trench filled with a decontaminating chemical, usually chlorinated lime mixed with mud. Vehicles that have come in contact with chemical agents are driven or wallowed through this trench so that they can be freed from the agents. Also called mud lime slurry course.

wall ratio. Ratio of the outside radius of a gun, a tube or jacket to the inside radius; or ratio of the corresponding diameters.

wanigan. House or shelter usually mounted on a vehicle or sled, which may be placed on the ground. It is used for sleeping, cooking and eating, storage, first aid, machine shop or other special purpose; particularly adapted for use in arctic regions.

war. 1. Open armed conflict between or among sovereign states or belligerent powers, esp. armed conflict recognized by formal declaration. 2. By hyperbole, any intense and hostile strife between sovereign states by means short of armed conflict, as in 'cold war.'

The present world makes distinctions between one kind of war and another. There are contained wars, uncontained wars, limited wars, restricted wars, unrestricted wars, general wars, world wars, total wars, peripheral wars, cold wars, and hot wars.

War Department. (WD) Between 1789 and 1947, a United States Government department, the secre-

tary of which had cabinet status, having the responsibility of organizing, training, and maintaining the Army and conducting certain nonmilitary activities.

In the reorganization following the National Security Act of 1947, the War Department, as such, was discontinued. The Department of the Army assumed its historic functions, except for those resulting from the development of air power. These latter were assumed by the Department of the Air Force. Under reorganization, the Secretary of Defense was given cabinet status, but departmental secretaries were not given this status.

war gas. Toxic or irritant chemical agent (which see) regardless of its physical state, whose properties may be effectively exploited in the field of war.

warhead. *Rocket and guided missile*. That portion of a rocket or guided missile designed to contain the load which the vehicle is to deliver. It may be empty or contain high explosives, chemicals, instruments or inert materials. It may include a booster, fuze(s), adaption kits, and/or burster. Excludes items which contain atomic weapon components.*

warhead assembly, rocket, empty. Rocket warhead without filling. An example with item name is given below.

WARHEAD ASSEMBLY, 762 MILLIMETER ROCKET, EMPTY.

warhead assembly, rocket, flash-smoke. Rocket warhead intended to produce flash and smoke upon functioning. An example with item name is given below.

WARHEAD ASSEMBLY, 762 MILLIMETER ROCKET, FLASH-SMOKE.

warhead assembly, rocket, high explosive. Rocket warhead loaded with, or designed for loading with, high explosives. An example with item name is given below.

WARHEAD ASSEMBLY, 762 MILLIMETER ROCKET, HIGH EXPLOSIVE.

WARHEAD, GUIDED MISSILE, CHEMICAL AGENT. A warhead containing a chemical agent, designed for attachment to a guided missile. It may be provided with a means of bursting. Excludes atomic weapon warheads and **WARHEAD, GUIDED MISSILE, HIGH EXPLOSIVE.***

WARHEAD, GUIDED MISSILE, EMPTY. A guided missile warhead without explosive or inert load. Excludes atomic weapon dummy warheads.*

warhead, guided missile, exercise. See: **EXERCISE HEAD, GUIDED MISSILE.**

WARHEAD, GUIDED MISSILE, FRAGMENTATION. A warhead for a guided missile, designed so that functioning of the explosive filler will destroy

or reduce the utility of a target, primarily by fragmentation effect.

WARHEAD, GUIDED MISSILE, GENERAL PURPOSE. A warhead for a guided missile, designed so that functioning of the explosive filler will destroy or reduce the utility of a target by explosive effect.

WARHEAD, GUIDED MISSILE, HIGH EXPLOSIVE. An explosive filled metal part constituting a major payload of a guided missile. Excludes atomic weapon warheads.*

WARHEAD, GUIDED MISSILE, INERT. A guided missile warhead loaded with nonexplosive inert material. Excludes atomic weapon inert warheads.*

warhead, rocket, dummy. See: **DUMMY WARHEAD, ROCKET.**

warhead, rocket, empty. Rocket warhead without explosive filler, for practice firing. Several examples are given herein with item name in each case.

WARHEAD, 2.25 INCH ROCKET, EMPTY.

WARHEAD, 3.5 INCH ROCKET, EMPTY.

WARHEAD, 5 INCH ROCKET, EMPTY.

WARHEAD, 11.75 INCH ROCKET, EMPTY.

warhead, rocket, gas. Rocket warhead loaded with, or designed for loading with, war gases. Several examples are given herein with item name in each case.

WARHEAD, 4.5 INCH ROCKET, GAS.

WARHEAD, 5 INCH ROCKET, GAS.

warhead, rocket, high explosive. Rocket warhead loaded with, or intended for loading with, high explosives. Several examples are given herein with item name in each case.

WARHEAD, 2 INCH ROCKET, HIGH EXPLOSIVE.

WARHEAD, 2.75 INCH ROCKET, HIGH EXPLOSIVE.

WARHEAD, 4.5 INCH ROCKET, HIGH EXPLOSIVE.

WARHEAD, 5 INCH ROCKET, HIGH EXPLOSIVE.

WARHEAD, 7.2 INCH ROCKET, HIGH EXPLOSIVE.

WARHEAD, 11.75 INCH ROCKET, HIGH EXPLOSIVE.

WARHEAD, 12.75 INCH ROCKET, HIGH EXPLOSIVE.

WARHEAD, 66 MILLIMETER ROCKET, HIGH EXPLOSIVE.

warhead, rocket, inert. Rocket warhead with inert filler for use in practice firing. Several examples are given herein with item name in each case.

WARHEAD, 2 INCH ROCKET, INERT.

WARHEAD, 2.5 INCH ROCKET, INERT.

WARHEAD, 2.75 INCH ROCKET, INERT.

WARHEAD, 4.5 INCH ROCKET, INERT.

WARHEAD, 5 INCH ROCKET, INERT.

WARHEAD, 6 INCH ROCKET, INERT.

WARHEAD, 7.2 INCH ROCKET, INERT.

WARHEAD, 11.75 INCH ROCKET, INERT.

WARHEAD, 12.75 INCH ROCKET, INERT.

WARHEAD, 66 MILLIMETER ROCKET, INERT.

WARHEAD, 318 MILLIMETER ROCKET, INERT.

WARHEAD, 762 MILLIMETER ROCKET, INERT.

warhead, rocket, smoke. Rocket warhead loaded with, or designed for loading with, a smoke producing filler. Several examples are given herein with item name in each case.

WARHEAD, 3.5 INCH ROCKET, SMOKE.

WARHEAD, 4.5 INCH ROCKET, SMOKE.

WARHEAD, 5 INCH ROCKET, SMOKE.

WARHEAD, TORPEDO. An item designed to contain an explosive charge and a means of detonation for attachment to a **TORPEDO MAIN ASSEMBLY**. When empty or inert loaded it may be used for training purposes.*

warhead, torpedo, exercise. See: **EXERCISE HEAD, TORPEDO.**

war potential. The capacity and capability of a country to conduct a war, with respect to political, economic, industrial, social, psychological, and military factors.

war reserves. That quantity of supplies, materiel, and equipment prescribed at the Headquarters, Department of the Army level which is retained for use in the event of mobilization for war.

wash. 1. The surge of disturbed air or other fluid resulting from the passage of something through the fluid; *specif.*, a surge of air and other gas that moves backwards and to the sides after an aircraft has passed. 2. The stream of air or other fluid sent backwards by a jet engine or a propeller.

washboard course. A test course for military vehicles consisting of a series of concrete blocks or humps on each side of the course, of varying heights and set at varying intervals. The purpose of this course is to measure flexibility of suspension systems under extreme conditions and the strength and resistance of bodies and frames against distortion.

WASHER, MOTOR VEHICLE. A washer used to project streams of water or detergent solutions for cleaning motor vehicle exteriors.*

WASHER, SOLUBLE, UNDERWATER MINE. An item formulated of chemical ingredients molded into a prescribed shape. When dissolved it permits mechanical movement of the mechanism in which it is used.*

Wasserfall. [From a German code name.] A German surface-to-air guided rocket missile of WW II. The Wasserfall used a liquid propellant.

water chest. Box containing water for a water-cooled machine gun; water box.

water displacement method. A method of loading chemical munitions with white phosphorous in which the item is filled with water and the molten phosphorous is introduced below the water level, causing displacement of most of the water. The water prevents oxidation of the white phosphorous.

water jacket. 1. *General.* Casing designed to hold water for cooling, built around a device or mechanism that becomes heated in operation. 2. The casing about the barrel of a water-cooled machine gun. 3

The water space around the cylinders of an internal combustion engine.

WATERPROOFING KIT, VEHICLE. A collection of items designed to prevent water from entering functioning parts on vehicles when operating on beaches and crossing streams.*

Watertown Arsenal. (WA) Ordnance Corps installation, forming a part of the Ordnance Weapons Command, located at Watertown, Massachusetts. Principal development and manufacturing installation for antiaircraft artillery weapons and heavy field artillery towed weapons, except cannon and fire control. It also has special mission assignments in connection with ferrous and titanium metallurgy and materials research. Location of the Ordnance Materials Research Office (OMRO).

water tunnel. A device similar to a wind tunnel, but using water as the working fluid instead of air or other gas.

Watervliet Arsenal. (WVT) Field installation of the Ordnance Corps, located at Watervliet, New York. Charged with responsibility for development and procurement, and associated activities, of Ordnance materiel classified as cannon.

wave. A swell on the surface of a liquid; anything likened to this. Applied to: a. A mass of air particles of relatively narrow compass having more or less like characteristics throughout, that moves as a line or front across space. b. A line of discontinuity in an airflow, esp. under conditions of compressibility, along which changes in pressure, velocity, temperature, density, and entropy occur, as in a shock wave (which see). c. An electric or electromagnetic pulse. d. Any one of a succession of aircraft formations that move across, or against, a target or other point.

wave, expansive. An oblique wave or zone set up in supersonic flow when the change in direction of the air flow is such that the air tends to leave the new surface, such as flow around the juncture of a cone and a cylinder. This condition is called flow around a corner. The air on passing through an expansive wave or zone has lower density, static pressure, and free-stream temperature and has higher velocity and mach number.

wave front. *Optics.* A surface normal (at right angles) to a bundle of rays as they proceed from a source. The wave front passes through those parts of the waves which are in the same phase and go in the same direction. For parallel rays, the wave front is a plane; for rays diverging from or converging toward a point, the wave front is spherical.

WAVEGUIDE. An item consisting of a hollow tube of conductive material having a predetermined cross section specifically designed to guide or conduct high frequency electromagnetic energy through its interior. Does not include coaxial cable. Refers to bulk quantities only.*

wave length. The distance traveled in one period or cycle by a periodic disturbance. It is the distance between corresponding phases of two consecutive

waves of a wave train. A wave length is the quotient of velocity divided by frequency.

WAVEMETER. A device operating on the "absorption" principle, used to measure the wavelength or frequency of radiated electromagnetic waves, or to calibrate electronic devices which produce and/or radiate electromagnetic waves.*

wave shaper. Pertaining to explosives, an insert or core of inert material or of explosives having different detonation rates, used for changing the shape of the detonation wave. See also: barrier material; lens.

waves, standing. Also called stationary waves. The wave-like distribution of potential along a conductor, when electric waves are reflected from the end of the conductor to form stationary nodes and loops; a condition of equilibrium, or zero motion, at certain lines, points, or surfaces, called nodes, with regions of vibration between, produced by interference between similar wave trains traveling in opposite directions.

waves, stationary. See: waves, standing.

WD (*abbr.*). 'War Department' (Historical).

wdn (*abbr.*). 'Wooden.'

weapon. (wpn) 1. An instrument of combat, either offensive or defensive, used to destroy, injure, defeat, or threaten an enemy, e.g., a gun, a bayonet, a bomb, or a missile. 2. By extension, any device, method, or circumstance that can be used either directly or indirectly to destroy, injure, or defeat an enemy, as in 'radar was turned into an effective weapon against the invading forces,' or 'the weapon of hunger will paralyze the city.' Cf: absolute weapon; weapon system.

weapon of mass destruction. Nuclear, bacteriological, or other weapon capable of causing widespread death or destruction.

weapon record book. Record book used to keep data on the performance, maintenance, and inspection of a gun or other weapon.

weapons carrier. Also called 'weapons carrier truck.' See: CARRIER, LIGHT WEAPONS, INFANTRY.

weapon system; weapons system. 1. In logistic use: A total entity consisting of an instrument of combat (a single unit of striking power), such as a bomber or a guided missile, together with all related equipment, supporting facilities, and services, required to bring the instrument upon its target or to the place where it carries out the function for which it was built. 2. In weapons analysis: Any single combat instrument that incorporates in itself a complex assembly of functional parts.

Use of the term in sense 1 arose because of the extremely complicated nature of measures required to create and deliver certain weapons to their targets. Different systems may be conceived, but they usually involve measures for coordinated action in training, logistic planning, strategic operations, tactical operations, air defense, and transport. Each system begins with the concept of the instrument of combat itself, leading through to its manufacture,

- to observe and study the airflow about such objects, as well as the aerodynamic effects upon them.
- wind velocity.** 1. The speed and direction in which a wind blows. 2. Wind speed. See: **Beaufort's scale.**
- wing.** (wg) 1. A general term applied to a major airfoil. 2. An airfoil on either side of an airplane's fuselage or cockpit, paired off by one on the other side, the two providing the principal lift for the airplane. 3. A rotor blade in a rotary-wing aircraft. 4. Either of the two airfoils or supporting surfaces attached to certain missiles or bombs, giving lift or giving support for gliding.
- Wingate Ordnance Depot.** Ordnance Corps field installation, located at Gallup, New Mexico.
- winged missile.** A missile that has wings, esp. a wing that provides lift. Distinguished from wingless missiles, such as bullets, projectiles, certain rockets, etc.
- wing, equivalent.** In stress analysis, a wing of the same span as the actual wing, but with the chord at each section reduced in proportion to the ratio of the average beam load at that section to the average beam load at the section taken as the standard.
- wing gun.** A fixed gun mounted in the wing of an airplane.
- wing loading.** See: **loading, wing.**
- wing mean chord.** See: **chord, mean, of a wing.**
- wing profile.** The outline of a wing section.
- wing rib.** A chordwise member of the wing structure of an airplane, used to give the wing section its form and to transmit the load from the fabric to the spars.
- wing section.** A cross section of a wing parallel to the plane of symmetry or to a specified reference plane.
- wing-tip rake.** A term referring to the shape of the wing when the tip edge is straight in plan but not parallel to the plane of symmetry. The amount of rake is measured by the acute angle between the straight portion of the wing tip and the plane of symmetry. The rake is positive when the trailing edge is longer than the leading edge.
- winterization.** The process of converting equipment, esp. by changes in accessories, instruments, or special installations, for use in cold or very cold weather, as in the arctic.
- WINTERIZATION KIT, VEHICLE.** A group of items used to prepare a vehicle for efficient operation during cold weather. It contains one or more heater(s) and necessary parts to insulate and/or inclose all or a portion of the engine compartment and/or cab and/or body.*
- winterize.** To fit out or modify a vehicle or other piece of equipment for operation in cold weather.
- WIRE, ARMING.** Wire of a size and type suitable for use in an **ARMING WIRE ASSEMBLY.**
- WIRE, SOUND RECORDING.** A flexible wire specifically designed to be used to record sonic variations thereon by magnetic means.*
- wire-wrapped.** Term applied to guns manufactured by wrapping wire under tension on a central tube. The wire puts the metal of the tube under compression. An outer cylinder or jacket is generally shrunk on over the wire. This method of manufacture was formerly used on many major caliber guns as it made possible a savings in weight.
- witness plate.** In the testing of antiarmor ammunition or armor plate, a plate placed behind target, usually spaced from the target to allow assessment of **beyond armor damage** (which see).
- Wizard.** Name applied to Air Force design for surface-to-air interceptor missile.
- w/o (abbr).** 'Without.'
- wobulator.** A device, usually mechanical, used to frequency-modulate an oscillator for test purposes. A small trimmer capacitor rotating at constant velocity across the frequency-determining network of the oscillator is an example.
- word.** *Electronic computers.* An ordered set of characters having a meaning and considered as a unit. Digital computers commonly use a fixed word length (that is, a fixed number of characters) which is a characteristic of each computer.
- wound ballistics.** That portion of terminal ballistics specializing in the effect of bullets and fragments in wounding personnel, and in the factors producing disabling injuries. See: **casualty criteria.**
- WP (abbr).** Chemical agent, 'white phosphorus' (smoke).
- wpn (abbr).** 'Weapon.'
- WRENCH, TORQUE.** A device designed to establish, by gage, dial or presetting, the torque in inch pounds, foot pounds, and the like, applied to a bolt, nut or the like, through the drive end.*
- Wright Air Development Center.** (WADC) Air Force center responsible for technical developments concerning aircraft and missile components. Located at Wright-Patterson AFB, Ohio.
- write.** *Electronic computers.* To introduce information, usually into some form of storage.
- WS-131.** Designation of Air Force design for 200-300 mile air-to-surface missile for aerial bombardment. Somewhat comparable to the Rascal but of longer range.
- WSEG (abbr).** 'Weapons Systems Evaluation Group.'
- WSMR (abbr).** 'White Sands Missile Range.'
- WVT (abbr).** 'Watervliet Arsenal.'
- WW I (abbr).** 'World War I.'
- WW II (abbr).** 'World War II.'

X

X (abbr). In such usage as XM19, designates an experimental type item. When the item is standardized, the 'X' is dropped. The use of 'X' and 'M' together as a prefix supersedes previous Ordnance Corps practice of designating experimental or test models by the single prefix 'T.' See also: M; T; A; E.

X-axis. 1. Horizontal axis in a system of rectangular coordinates; that line on which distances to the right or left (east or west) of a reference line are marked, especially on a map, chart, or graph. 2. Horizontal line imagined to pass through the target

at right angles to the line connecting gun and target.

X-band. A designation formerly given to a band of radio frequencies between 5,200 and 11,000 megacycles. *Obsolescent.* See: frequency, electronic.

X-engine. An in-line engine with the cylinder banks so arranged around the crankshaft that they resemble the letter 'X' when the engine is viewed from the end.

xylydine. Any of certain isomeric hydrocarbon compounds having the formula $C_6H_3(CH_3)_2NH_2$, used esp. in fuels.

Y

yaw. 1. The angle between the direction of motion of a projectile and the axis of the projectile, referred to either as 'yaw,' or more completely, 'angle of yaw.' The angle of yaw increases with time of flight in an unstable projectile and decreases to a constant value, called the 'yaw of repose,' or the 'repose angle of yaw,' in a stable projectile. See also: **stability factor**. 2. Angular displacement about an axis parallel to the normal axis of an aircraft, guided missile or the like.

yaw acceleration. See: **acceleration, yaw**.

yaw damper. A control system or device that reduces the yaw of an aircraft, guided missile, or the like.

yaw in bore. The maximum angle between the axis of the bore of a gun and the axis of the projectile which can occur due to the clearance between the bore diameter and the bourrelets. Cf: **balloting**.

yaw of repose. See: **yaw**.

Y-axis. 1. Vertical axis in a system of rectangular coordinates; that line on which distances above or below (north or south) of a reference line are marked, especially on a map, chart, or graph. 2.

Line imagined to pass from the gun through the target, perpendicular to the imaginary horizontal X-axis which crosses it at that point.

Y-azimuth. Clockwise angle from grid north, to a given direction. Often called 'grid azimuth.'

yellow. Indicates, in the nomenclature of a SIGNAL, SMOKE, GROUND, several smoke pellets which produce freely falling streamers of yellow smoke at the height of the trajectory.

yellow tracer. Indicates, in the nomenclature of a SIGNAL, ILLUMINATION, AIRCRAFT, a yellow tracer light, followed by freely falling stars (lights) of indicated colors.

Y-gun. Two-barreled, antisubmarine gun, shaped like the letter Y, used to throw depth charges to either side of the stern of the vessel on which the gun is mounted.

yield. The amount of explosive force expended in an atomic explosion, measured or expressed in kilotons or megatons, terms which indicate the amount of TNT that would produce an explosion of the same power. See: **kiloton**; **megaton**.

Z

zenith. The point in the celestial sphere directly overhead.

zenith distance. In celestial navigation, the shorter angular distance of a celestial body from the zenith measured along the vertical circle that passes through the body. Also called 'co-altitude.'

This is equivalent to the angular distance between the observer and the subpoint of the body, and may be expressed in nautical miles. When so expressed, it is not called 'co-altitude.'

zero. 1. *Electronic computers.* Nothing; positive binary zero is usually indicated by the absence of digits or pulses in a word; negative binary zero in a computer operating on one's complements by a pulse in every pulse position in a word; in a coded decimal machine, decimal zero and binary zero may not have the same representation. In most computers, there exist distinct and valid representation both for plus and for minus zero. 2. Sight setting for both elevation and windage for any particular range which will cause the bullet to strike the center of the target on a normal day under favorable light conditions with no wind blowing. 3. Adjust any instrument or apparatus to a zero point or to an arbitrary reading from which all other readings are to be measured.

zero deflection. Adjustment of a sight exactly parallel to the axis of the bore of the gun to which it is attached.

zero height of burst. Condition obtained when rounds fired with the same fuze setting and the same quadrant elevation result in an equal number of airs and grazes.

zero in. 1. To adjust the sight settings of a gun by calibrated results of firings. 2. To adjust any device to another so that automatic synchronization results.

zero length. Term applied to such items as rocket launchers and rocket suspension bands to indicate that the item is designed to hold the rocket in position for launching but not to give it guidance. See: **BAND, SUSPENSION, ROCKET**; launcher, zero length.

zero-lift angle. See: angle, zero-lift.

zero point. The location of the center of a burst of an atomic missile at the instant of detonation. The zero point may be in the air, or on or beneath the surface of land or water, dependent upon the type of burst, and it is thus to be distinguished from ground zero.

zero twist. See: twist, zero.

ZI (*abbr.*). 'Zone of interior.'

Zn (*code*). 'True azimuth.'

zone. 1. Any tactical area of importance, generally parallel to the front, such as a fortified area, a defensive position, a combat zone, traffic control zone, etc. 2. Area in which projectiles will fall when a given propelling charge is used and the elevation is varied between the minimum and the maximum. Use of the term is generally limited to howitzer and mortar firings.

zone charge. The number of increments of propellant in a propellant charge of semifixed rounds, corresponding to the intended zone of fire; e.g., zone charge 5 consists of 5 increments of propellant. See also: increment.

zone fire. Artillery or mortar fire that is designed to cover an area in which a target is situated.

zone of dispersion. Area over which shots scatter when fired with the same setting.

zone of interior. (ZI) 1. That part of a national territory held intact against the enemy, in which the main manpower, weapons, and equipment are generated for use of the armed forces. 2. By inference, the continental United States.

zone, weight. See: weight zone.

zoom. To climb for a short time at an angle greater than the normal climbing angle, the airplane being carried upward at the expense of kinetic energy.

Zuni. General purpose rocket, for air-to-air and air-to-ground combat. A 5-inch, folding-fin, solid-propellant rocket developed by the Navy.

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